An investigation into adult learners' experiences of developing distributed learning networks with self-publishing technologies

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Certificate of Original Authorship

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

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Signature of Student:

Date:

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My friends and family have endured my journey with tireless encouragement. My brother Martin who has managed long distance time zone differences to stay connected with my progress. And of course, the unconditional companionship from my dogs and the interfering interest in my piles of papers from my cats. However, without the conviction and dedication from my husband, Stephen, I would not have been able to fulfil my aspirations.

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Bartlett-Bragg, A. 2003a, 'Blogging to learn', *The Knowledge Tree*, no. 4, December, <http://www.flexiblelearning.net.au/knowledgetree/edition04/html/blogging_to_learn_intro.html>

Bartlett-Bragg, A. 2003b, 'Blogs – enhancing reflection in e-learning', paper presented to the *e-Learning: A virtual promise? 4th international conference on human-system learning*, Glasgow, 2–4 July 2003.

Bartlett-Bragg, A. 2003c, 'Preparing for the future', paper presented at the *e-Learning: A virtual promise? 4th international conference on human-system learning*, Glasgow, 2–4 July 2003.

Bartlett-Bragg, A. 2005, 'Preparing for the future', *International Journal of Design Sciences & Technology,* vol. 12, no. 2, pp. 115–22.

Farmer, J. & Bartlett-Bragg, A. 2005, 'Blogs @ anywhere: High fidelity online communication', *Proceedings of the balance, fidelity, mobility: Maintaining the momentum, ASCILITE conference,* Brisbane, 4–7 December , pp. 197–203. <http://www.ascilite.org.au/conferences/brisbane05/blogs/proceedings/22_Farmer.pdf>

Bartlett-Bragg, A. 2006, 'Reflections on pedagogy', paper presented to the *BlogTalk reLoaded conference*, Vienna, 2–4 July.

Bartlett-Bragg, A. 2007, 'Reflections on pedagogy: Understanding adult learners' experiences of weblogs', in T. Burg & J. Schmidt (eds), *BlogTalks reloaded*, Herstellung, Vienna, pp. 119–241.

Bartlett-Bragg, A. 2008a, 'e-Learning experiences', in J. Athansasou (ed.), *Adult education & training,* David Barlow Press, Terrigal, NSW, pp. 295–308.

Bartlett-Bragg, A. 2008b, 'Pedagogical practice for learning with social software', in T. Hansson (ed.), *Handbook of research on digital information technologies: Innovations, methods, and ethical issues*, Information Science Reference, Hershey, PA, pp. 160–76.

Bartlett-Bragg, A. 2008c, 'Reframing assessment', in J. Luca & E. Weippl (eds),

Proceedings of world conference on educational multimedia, hypermedia and telecommunications 2008, AACE, Chesapeake, VA, pp. 4020–4.

Bartlett-Bragg, A. 2009, 'Reframing practice: Creating social learning networks', *International Journal of Development and Learning in Organisations,* vol. 23, no. 4, pp. 16–20.

Definitions of Terms used throughout the Thesis

A list of definitions of terms related to social software and weblogs that may be referred to in this thesis are outlined below. It is relevant to note that some terms were popular at the time of the study, but are no longer common usage, or the technology has evolved and the term is redundant (these are highlighted).

Aggregator: A software application, often called a 'feedreader' used to gather a subscriber's feeds and present them in a browser page. The aggregator is automatically updated on a regular basis with new content from the feeds as they become available.

Asynchronous technology: Communication technologies that allow exchanges in elapsed time. For example, email, or discussion boards, frequently used in LMS. SMS sent via mobile phones is commonly included in this category.

Architecture of participation: Coined by Tim O'Reilly in 2003, refers to systems (software) that are designed for user contributions, where a community of users influences the content and / or design of the processes.

Blogs (weblogs): A website publishing software, generally written by a single author, displaying dated entries in reverse chronological order. Additional features enable the author to categorise and archive each entry. Most blogs allow readers to use a comment function to provide feedback to the author.

BYOD: Bring your own device, a term frequently used in contemporary contexts that refers to a preference for using personal devices rather than those supplied by an institution or organisation. Hence, bring your own. Typically includes laptops, mobile phones, and tablet devices.

CMC: Computer-mediated communication, generally assumed to be accessed via the internet, typically used to refer to discussion boards and chat rooms.

Distributed Learning Network (DLN): In this research study, a DLN is defined by a network of learners, connected through the internet, where communication, sharing, and learning is distributed across the collective, shared understandings through the network as a whole, not the individual. See Chapter Two, Section 2.2 for further description.

ePortfolio: Electronic portfolio – typically referring to a collection of artefacts, similar to an electronic CV. Recent developments have seen a new range of software applications that provide the online structure, such as Mahara which is being used extensively in the Australian vocational education sector. However, it is argued that an individual collecting and presenting their work in any online format, in particular using weblogs, is publishing an ePortfolio.

Folksonomy: A user-generated categorising system or taxonomy facilitated by applying popular or commonly referred to tags or labelling terms. (Redundant: this term is rarely used in current social software terminology).

ICT: Information and Communication Technology – commonly used in a broad context to describe any communication technology. However, more recently it has been accepted as referring to web-based technologies.

LMS: Learner Management System, e.g. Blackboard. Used by both Higher Education Institutions and enterprises to manage and report on learner activities, and to store and distribute learning materials. Generally available to users through any internet connection; however, some organisational contexts may have restricted access to onsite only.

mLearning: to learning delivered using mobile devices, initially only through web-enabled mobile phones, most recently being used with iPhone (smartphones) and iPad (tablet) applications. Very few mobile phones were web-enabled at the time the study was conducted and they were not being commonly used for learning.

PLE: Personal Learning Environment – a learner-centred approach that allows the learner to select and maintain different social software platforms that best suit their learning needs and context. Frequently, the weblog is the underpinning platform that supports the aggregation of content from other social software applications, such as Delicious (social bookmarking).

Podcast: A digital audio file distributed over the internet, downloaded by subscribers for playback on computers or portable devices, such as mobile phones.

RSS: Really Simple Syndication is a function that allows content to be imported into other web pages. RSS originated in weblog software but is now available across many

other sources, such as news and journal sites. RSS enables readers to subscribe to webfeeds from sites of their choice, monitor updates, and view them in a single page from a web-based service called an aggregator, e.g. Netvibes (http://www.netvibes.com). The power of the aggregator for learners comes from the ability to control and manage the flow of information in a centralised manner.

Social bookmarking: A browser-based service, similar to a Favourites list on an individual computer, that allows the user to share website bookmarks with others, for example Delicious. Folksonomy tagging encourages the development of shared interest networks.

Social media: A sub-set of social technologies or social software, social media typically refers to publically available software that allows people to interact with each other. Content is based on a user-generated and user-participation model and is commonly associated with sites such as Facebook, YouTube, and Twitter and can encompass weblogs, most likely to be associated with consumer facing brands.

Social network: A social network is made up of connections between nodes, generally represented by individuals, where the strength of the connection is created through relationships. A social networking site, such as Facebook, refers to a website that is based on individuals creating user profiles to connect with others.

Social software: A term attributed to Clay Shirky in 2003. The range of applications that augment group interactions and shared spaces for collaboration and social connections, and aggregates information exchanges in a web-based environment. Social software is considered a major component of the current Web 2.0 applications.

Social technologies: A term frequently used interchangeably with social software. It encompasses all social software applications as an umbrella term. Social media and social networking are sub-sets under this umbrella.

Synchronous technology: Communication technology that enables real-time exchanges, such as online chat, webinars, and video-conferencing.

User-generated content: Typically refers to content produced by the general public, rather than content controlled by a web-master. The social software applications used to provide user-generated content are all based on users being the content publishers. The

term can also be applied to specific areas of a website, for example, the comment function on a weblog, where the author of a weblog controls the content of the post, but the general public has the ability to contribute comments to each post.

Vodcast: A video podcast or video clip distributed on the internet and available for download through RSS subscription and aggregation for playback on computers or portable devices, popularised more recently by the success of YouTube (which was not available at the time of this research study). (Redundant: Vodcast is a term rarely used, the more commonly used term would just refer to video.)

Web 2.0: Coined by Tim O'Reilly in 2005, a series of new generation or 2.0 software applications available on the world wide web. Typically, it includes applications that have a rapid, low-cost approach to development, focused on mash-ups (created by combining different sources to create a composite application). The underpinning philosophical principles of development are focused on people and participation, emphasising ease of use (usability), enabling participation and communication, and facilitating networks of people with shared interests to connect. Web 2.0 software developments include the social software range of weblogs, wikis, social bookmarking, and others referred to in this thesis.

Wiki: A collaborative authoring website application that allows groups of users to easily write, edit, and publish content to the internet. Used frequently for community, group or project-based learning activities.

Abstract

Currently, higher education institutions and organisational learning contexts are experiencing significant change where educators are challenged by a reduction in available funding, a disconnect between offerings and learner expectations, and a rapidly shifting technology landscape where personal computing options are ubiquitous and frequently more engaging and flexible than options available through universities or workplaces. As organisations search for new business models and more cost effective methods to distribute content and reach a greater number of learners, the potential to implement strategies to improve learning and enhance experiences through self-publishing with social software and associated networked technologies is not being realised.

This study was conducted in 2005, when the use of weblogs and related social software was increasing in ease of use and adoption rates, with a growing number of supporters claiming the weblog was going to be the most significant technological development in online learning since the introduction of enterprise level Learner Management Systems. The basis of the study was to investigate the variation in adult learners' experiences of developed distributed learning networks (DLNs) that extended the learning beyond the physical boundaries and opinions of the classroom context through the use of self-publishing social software.

The research used an original pedagogical approach, the 5-Stage pedagogical framework (5SPF), which was developed from five years of practice for the introduction and integration of social software into learning environments. This framework enabled the collection of data directly addressing the research questions that form the basis of this thesis. The systematic approach to understanding the learners' collective experience of self-publishing provided by the 5SPF enabled a focus on the scaffolding and support required by students within this teaching and learning environment.

This innovative methodological research framework was developed through a combination of phenomenographic and interpretive methods to determine the qualitatively different ways learners experience the use of self-publishing technologies, in particular weblogs.

The range and depth of data sets obtained through the methodological framework has facilitated a rich set of findings that were complied over a relatively long period of time. This longer period of time enabled the research participants to reflect upon their responses in ways that are not possible using traditional qualitative methods.

The results indicate the pedagogically significant variations represented in phenomenographic categories of description that highlight the critical differences in the ways learners experience the process of developing and learning in a DLN, while the expanding themes of awareness informed the DLN outcome space that demonstrated the value of the 5SPF to specifically provide strategies to enable new approaches to learning through self-publishing and highlighted the need for a new approach to teaching with social software, the Connected Educator.

A retrospective review of literature and practice at the time of the study is made relevant through the analysis of results in comparison with contemporary perspectives and current research, demonstrating the validity of the 5SPF as an approach that has withstood enhancements in new technologies and increasingly signifies the need to ensure that a strategic pedagogical approach is present in the current changing learning landscape.

The thesis describes major contributions from the study, highlighting that the emphasis on technology is less consequential to a learning impact than the value attributed to the act of learning through self-publishing and the importance of a pedagogical framework to successfully integrate new technologies into learning environments.

Chapter One

Unrealised Potential – Weblogs and Pedagogy

1.0 Introduction

The overarching theme of this thesis relates to the unrealised potential of self-publishing with social software, more specifically weblogs, within teaching and learning in adult education contexts. The central argument underlying this theme is that in order for the potential to be realised, the use of these technologies needs to be integrated into a carefully constructed pedagogical framework that sets out precisely the roles of both learners and the educator.

The findings have revealed the pedagogically significant variations in the ways learners experience the process of developing and learning with social software. The emergent themes from the findings indicate a series of interconnected relationships that specifically provide strategies to enable new approaches to learning through self-publishing and highlighted the need for a new approach to teaching with social software, the Connected Educator.

The research for this thesis was situated in a setting where higher education institutions and organisational learning contexts were experiencing significant change related to the introduction of eLearning initiatives. Since the time the research was commenced in 2004, the education sector has remained in a state of flux and further disruption is predicted where educators are likely to be challenged by additional reduction in available funding, a widening disconnect between provision and learner expectations, and a rapidly shifting technology landscape. Meanwhile, a plethora of personal computing options have been developed and adopted, and many of these are frequently providing more engaging and flexible learning options than those available through universities or workplaces (Conole 2013; Dua 2013; Oblinger 2013).

Since the early 2000s, the broad introduction of eLearning has caused many adjustments by institutions, educators, and learners as they attempt to navigate rapid technological change. Many of these adjustments have challenged traditional pedagogical models of education based on face-to-face, knowledge dissemination and acquisition models. As it

began to be adopted, a significant number of educators dismissed eLearning as a fad, demanding results that unequivocally demonstrated improved learning outcomes in comparison to existing practices (Zemsky & Massy 2004). This focus appeared to reinforce a parochial model of traditional classroom or lectured-based learning that has become difficult to sustain in a fast changing, information rich, networked society. A brief review of the history of eLearning is covered in Chapter Two, Section 2.1.1 to provide a contextual perspective on the underpinning assumptions and contentious issues of the time when the study was conducted.

The research for this thesis forms the basis of a detailed study of the potential for personal learning and development with a focus on the emerging social software, in particular the self-publishing opportunities afforded by weblogs. The data for the study was collected in 2005, when the use of weblogs and related social software was increasing in ease of use and adoption rates, with a growing number of supporters claiming the weblog was going to be the most significant technological development in eLearning since the introduction of the enterprise level Learner Management Systems (LMS) (Downes 2004). The results will demonstrate the valuable contribution that transcends time by providing a knowledge framework that scaffolds the process of self-publishing.

The doctoral research objective was to investigate the collective variation in adult learners' experiences of developing personalised, distributed learning networks (DLNs) that extended the learning beyond the physical boundaries and opinions of the classroom context through the use of self-publishing with weblogs. The dynamic of self-publishing academic work was a new experience for learners. Their previous experiences with eLearning had either been controlled through an institutional LMS where subject-related interactions (if asynchronous forums were in use) were restricted by enrolment, or an eLearning course, provided by a third party where interactions were constrained by pre-determined response formats. Social software shifted the locus of control to the learner through not only the act of publicly publishing their study notes and assessment tasks, but also the personalised control or ownership of the software environment. The adjustment to new ways of interacting online required a modification in pedagogical approach to support the learners with the change, but also facilitate new learning opportunities.

Weblogs were identified as the most appropriate software platform available at the time of the study to enable the learners to develop personalised learning networks. More recent developments in social software, in particular social networks, provide a greater variety of interactions and rich media content options for connecting with others. Chapter Six will discuss the implications from the research findings in light of the affordances of these emerging technologies. Nonetheless, the weblog remains one of the most powerful self-publishing tools with the flexibility for learners to publish and organise content. The simplicity of use required no programming skills and the available features made participation uncomplicated for learners, even with low levels of computer confidence. Chapter Two will illustrate the weblog features and how self-publishing, the act of learner-controlled use of weblogs, was a novel learning experience for the students.

The context of the research and the main issues relating to the use of weblogs in education are introduced in Section 1.3 and a detailed description of weblogs and their role in the development of personalised learning networks in the study is outlined in Chapter Two. These networks will be referred to throughout the thesis as DLNs; a further explanation of learning networks in the research context is outlined in Chapter Two, Section 2.2.3. Continuing to build upon the practical application of weblogs in learning networks, Chapter Three reflects the theoretical perspectives that sought to underpin this new approach to learning through self-publishing software.

Through both professional practice and personal experience, prior to the commencement of this study, it was recognised that a shift in pedagogical approach would be required to support the new learning capabilities of social software. As a consequence, an original pedagogical model, the 5-Stage pedagogical framework (5SPF), was designed and developed. This framework was informed by four years of practice prior to the commencement of the research study and intensive engagement with available literature. It was intended to facilitate and make more meaningful the introduction and integration of social software into learning environments (see Section 1.3 in this chapter for the provenance of the 5SPF).

The 5SPF was the foundational basis for accessing the effects of technological integration on the experiences of the learners during the data collection stage of the project. Through a systematic approach to understanding the learners' experience of

self-publishing publicly to the internet, the expected outcomes from the research aimed to provide educators with an effective adoption and integration methodology for social software that enables the creation of personalised DLNs. A detailed explanation of the stages within the 5SPF are provided in Part Two of Chapter Three, where both the practical and theoretical aspects enable insight into how educators can assist the learners experience the introduction of social software and new learning environments to create their DLNs.

A novel methodological research framework was designed through a combination of interpretive and phenomenographic methods to determine the qualitatively different ways in which learners collectively experience the use of self-publishing with weblogs. At the time, methods for researching internet-based activity were limited and predominantly used case study or quantitative approaches for collecting and analysing data. In Chapter Five, it will be shown that the range and depth of data sets obtained from the methodological framework facilitated a rich set of findings that were compiled over a relatively long period of time and enabled the research participants, see Section 1.3, to reflect upon their responses in ways that were not possible using traditional qualitative methods.

The findings from the research, as detailed in Chapter Five, follow the phenomenographic analysis process and are expressed in three iterations. Firstly, corresponding with the learners' approach to developing DLNs as a group, the findings are presented to correspond with the stages in the 5SPF. Secondly, the findings are presented as phenomenographic categories of description, which highlight the pedagogically critical differences in the ways that learners can experience the process of developing and learning in DLNs. In the third and final iteration, the expanding themes of awareness from the categories of description informed the phenomenographic outcome space that demonstrated the value of the 5SPF to specifically provide strategies that can enable new approaches to learning through self-publishing and highlighted the need for a new approach to teaching with social software.

The researcher contributed specialised expertise to the study by drawing upon previous experience with emerging social software applications, and designing, developing and teaching university subjects in eLearning to adult learners (see Section 1.1). The

location and role of the researcher in the design and application of the study will be addressed in further detail in Chapter Four.

In this chapter, an overview of the research study is presented to position the context of the study and the background of the researcher, i.e. the rationale, objectives and research questions. The chapter concludes with an overview of the structure of the thesis including an illustrative contextual representation through a visual timeline that highlights the significant markers in the development of social software and activities in the research project (see Section 1.5).

A definition of terms used throughout this thesis relating to social software and weblogs in particular has been provided, see pp. xii – xv.

1.1 The researcher's perspective

A pivotal element to the background of this research study is the location of the researcher within a specialised professional context. This had a particular influence on the perspective of the study. As an early adopter of eLearning in the mid-1990s, the researcher's consultancy business was providing clients with workplace organisational eLearning opportunities through a blended mode of face-to-face and online discussion forum-based eLearning. The success of these initiatives led the researcher to post-graduate studies that focused on the nature of adult learners' experiences through the use of eLearning technologies and guided a decision to further expand academic practice and embark on doctoral studies.

In 1999, bringing strong practice-based experience at a managerial level in organisational learning, the researcher began casual lecturing positions across a range of adult learning subjects including Human Resource Development (HRD) Strategies, Program Delivery and Evaluation, and Assessment Strategies. From 2002 to 2008, the researcher developed, delivered and co-ordinated five eLearning undergraduate subjects in the Faculty of Education at a metropolitan university in Australia. In 2006 to 2009 this was extended to include three post-graduate subjects in the Masters of Education degree. In 2003, with the release of the Diploma of eLearning, based on units of competence in the Australian Qualifications Training Framework (AQTF), the

researcher was contracted to develop and deliver the eLearning vocational qualification for a centre within the Faculty that was a Registered Training Organisation at the university.

Concurrently, in 2002, through continued post-graduate studies at a Masters level, the researcher designed an original pedagogical framework informed by teaching practice and research. Initially influenced by observation of learners' behaviours when introducing new technologies into classroom settings, a search for literature to provide insight and further guidance was conducted. Chapter Three will detail the theoretical underpinnings and the adaptation of practice that occurred during the early versions of the framework, prior to its final design used as the basis for collecting data in this study.

The overarching intention for developing the framework was to provide strategies for integrating eLearning technologies into university and vocational education subjects to enable adult learners to engage more effectively online. The first version of the framework was presented at a conference (Bartlett-Bragg 2003b) and a peer-reviewed article published (Bartlett-Bragg 2003c). Peer feedback to both conference presentations and published journal articles was incorporated in the process of critical reflection on practice and informed adjustments to the framework (see Chapter 3, Part One for specific examples where feedback was utilised). In 2004, this doctoral research was commenced to further investigate the learners' collective experiences through the application of the framework, subsequently named the 5-Stage pedagogical framework (5SPF). As mentioned above, the location of the researcher in the study is described in more detail in Chapter Four, Section 4.4.1, where the dual role of both lecturer and researcher is addressed in the design to contribute a strength and depth of analysis from multiple perspectives.

1.2 The research problem and rationale for the study

It is irrefutable that web-based technology has had a profound impact on the adult learning landscape for more than decade. Whether that landscape is a higher education institution, a vocational college, or the corporate training context, eLearning has been the buzzword from boardrooms to classrooms. Yet, not since the introduction of the printing press has any other learning strategy and practice been subjected to the scrutiny

and examination imposed upon eLearning. No other innovation has been met with such divided opinion: adverse resistance by some, heralded by others as the greatest innovation with the potential to transform the role of education. Nor has any other pedagogical practice been put under such enormous pressure to demonstrate effectiveness (Bartlett-Bragg 2008a).

The catalyst accredited with stimulating such dramatic alterations to the traditional approaches to learning and a crucial aspect of the changes being experienced in the early 2000s was the reduced cost of communication enabled by the availability of the internet and the affordability of personal computing devices. Communication technologies such as email, instant messaging, the world wide web, social networking platforms, web-enabled mobile phones or smartphones, and most recently tablet devices are empowering learners, geographically dispersed but connected by technology, to gather information, make choices and decisions, and interact with many people without the boundaries imposed by educational institutions and classroom-based learning environments.

While early versions of eLearning initiatives have been criticised for poor attention to pedagogical structure and lack of learner engagement (Adams & Morgan 2007; Brown 2009; Macpherson et al. 2005; Oblinger 2010; Zemsky & Massy 2004), the development of social software, commencing in the early 2000s, facilitated the creation of communities and networks with rich self-publishing capabilities. These new software platforms were bringing more people together to share, collaborate, build knowledge, network, and learn. Subsequently the conception of knowledge development was being adjusted from one of passive consumption of information via static web pages, such as produced by many early eLearning initiatives, to active engagement with content and social interactions with other learners.

The early eLearning initiatives were frequently designed with a behaviourist approach to learning and delivered content in a linear sequence with learner interactions limited to clicks to progress to the next screen or multiple choice quizzes with poor levels of feedback. Not surprisingly, these types of learner interactions were blamed for the low levels of engagement, with little consideration to the appropriateness of the pedagogical approach. The role of the educator as teacher in these contexts was minimal, if not

entirely removed, aimed at reducing cost of resources and increasing the capability to publish courses and reach increased numbers of learners.

The further application of eLearning initiatives was driven by economic and administrative efficiencies with the installation of an LMS. Institutions used the LMS as course-related content repositories by uploading previously available paper-based materials for subjects into the online environment. The use of collaborative functionality, such as asynchronous discussion forums, was not widespread during the early stages of LMS introduction. The lack of discussion forum uptake into existing practices was rationalised by educators as additional workload beyond current face-to-face requirements, without consideration of the pedagogical impact (Anderson et al. 2001). The use of asynchronous discussion forums and social software will be further examined in Chapter Two, Section 2.2.

Amongst the consequences of social software integration for adult learning has been a shift away from a behaviourist pedagogical approach of knowledge strictly organised into disciplines, courses, and subjects. New arrangements have adopted a more constructivist, social learning approach to pedagogy that allows learners to personalise and re-structure knowledge in ways that align with their own learning goals (Downes 2010a). Where information is readily available at different times and there is flexibility to re-examine, reflect, and update knowledge when relevant to the learner (Bartlett-Bragg 2007; Fiedler & Pata 2009).

Figure 1.1, in Section 1.5 of this chapter, illustrates the development timeline of social software and maps the release of popularly available social software against the timeline and major activities of this research project. Nonetheless, the researcher noted that attempts to integrate institutional and organisational learning initiatives demonstrated limited awareness of the potential afforded by new, publicly available social software and that there seemed to be an inadequate understanding of learners' needs and behaviours when introducing technology into current practice. The desire to understand the significance of the learners' experience and to more adequately inform pedagogical practices were the fundamental inspirations in framing the research problem.

As a result, the research problem focused on how to provide an alternative pedagogical approach to assist educators and learners to adopt and use new technologies effectively

in their practice through a systematic approach to understanding the learners' collective experience of self-publishing. To address the problem, the 5SPF was used as the pedagogical framework for introducing self-publishing activities, using weblog software that enabled the data collection methods to reflect the learners' experiences in this research study.

The rationale for this particular study was to examine the potential for learning and development with weblog self-publishing software functions that had been viewed as outside the scope of existing eLearning methods by universities and corporations.

In Chapter Two, Section 2.1.1 a review will contextualise the historical position of eLearning and the key driving forces behind the initial growth in the adoption. However, as will be demonstrated throughout this thesis, the emphasis on the economic and administrative efficiencies has led to a diversion in thinking about eLearning that may explain the unrealised potential identified in the findings from this study. While this study was concerned with the integration of social software as an enabler to introduce new ways of learning with technology, the focus of the research was on the social aspects of the learning process and pedagogical approaches rather than the technology capabilities and features. Self-publishing was therefore studied from two perspectives: both the network or collective perspectives of the respective groups of research participants and the individual capabilities underlying this.

1.2.1 Significance of the study

The effective use of asynchronous discussion forums contained within the LMS structure was recognised by educators willing to experiment with new forms of learner engagement as a valuable tool for shifting their pedagogical approach to a more discursive space (Farmer & Bartlett-Bragg 2005). Salmon (2000) was an early adopter of asynchronous discussion-based learning, having developed a model, Computer Mediated Conferencing (CMC), as a structured guide for the effective integration of discursive online spaces into existing subjects. The CMC model was a major influence on the researcher's early practice for introducing new technologies; however, a point of departure from the model occurred when applied to social software, which led to a further literature review in an attempt to understand the learners' observed behaviours

and alignment to pedagogical approaches. Further discussion of Salmon's (2000) CMC model and its impact on the development of the 5SPF can be found in Chapter Three, Section 3.3.1.

At the time data was collected for this study, in 2005, other reported research projects in the educational context had utilised different weblog functions that had both extended and, in some instances, replaced existing online communication tools, such as asynchronous discussion boards. These weblog research projects had been implemented by universities in an attempt to connect different faculties and communicate more effectively across a diverse university context (Winer 2003). Researchers used weblogs instead of bulletin boards (Wise 2005), as publication tools for critiques (Cooper & Boddington 2005), as the primary tool for online communication (Gibson 2004) and as independent learning and design journals or ePortfolios (MacColl et al. 2005).

Another significant indicator that weblogs were being recognised as an educational technology of note was the inclusion of weblog-like journals as part of the selection of features in the dominant LMS products in higher education institutions, such as Blackboard and WebCT (around 2005 – 2006). Nevertheless, it can be argued that the LMS was a closed entity, constrained within the boundaries of the university subject, the classroom, and the institution. In contrast, the weblog as a publishing platform had the potential to be more dynamic, open, personal, publicly published on the internet, and collaborative and could facilitate learners consolidation of their writing skills by exposing them to a broader audience and hence a diverse range of opinions and a deeper learning experience.

Although many studies of weblogs in education at the time reported relatively positive outcomes in terms of results (Downes 2004; Glogoff 2005; Reynard 2005), areas in which no significant difference or negative outcomes had been noted. Specifically, these educators reported struggles with maintaining learner participation, getting learners to engage in the weblogging environment, conducting collaborative tasks using weblogs, and renegotiating private reflective tasks into the public internet space (Gibson 2004; Krause 2004; MacColl et al. 2005). In addition, studies conducted after the data was collected for this study have found that many students chose not to use weblogs when provided with the software due to difficulty with the technology interface and

preferences for other online communication forms (Andergassen et al. 2009; Beuschel 2009; Munday 2013).

In these cited cases, educators examined the negative issues reported and attributed them to the functionality and selection of weblog software options. None had considered the results from a pedagogical perspective and investigated their own strategies and approaches to teaching. Chapter Two will elaborate on the use of weblogs in education with a more detailed examination of the features offered by the software, but also the pedagogical and contextual approaches that highlight the significantly different learning opportunities afforded by the integration of weblogs. These approaches will be contrasted with the approach in this research study and other practices being used and researched at the time.

The outcomes from the research study are significant because the pedagogical framework (the 5SPF) that was used as the essential element for collecting data, was designed to address the lack of learner engagement, the maintenance of learner participation, the development of reflective writing skills, and the creation of DLNs through the process of self-publishing. It will be shown to result in a number of significant contributions to pedagogy that are arguably more important in the contemporary educational landscape than they were at the time of the study during the early adoption phases of social software.

1.3 Research context: weblogs, networks and pedagogy

The research study was situated within four different eLearning subjects, three at undergraduate level and one group studying a vocational eLearning qualification. The integration and experience of learning with new and emerging software for learning opportunities was a core underpinning perspective of all the eLearning subjects being studied as part of gaining the qualifications. Consequently, this approach was intended to support the expanded view of eLearning that encompassed more than an administrative, content delivery tool towards the pedagogically-oriented eLearning 2.0 definitions outlined in the Definition of Terms (see pp. xii – xv) and described further in Chapter Two, Section 2.1.1.

As previously highlighted, the social software selected as the foundational basis to develop DLNs for this study was the weblog. The weblog, as a personal publishing platform, has evolved into one of the most ubiquitous software applications of the past decade. Yet at the time of this study, in 2005, research on the weblog phenomenon, and in particular on the use of weblogs in education, was relatively under-represented in doctoral dissertations and had been limited to smaller projects that were related directly to practice or were conceived as initial pilot studies that might inform future, larger projects (Larsson & Hrastinski 2011). See Chapter Two for further discussion on the contextual use of weblogs in education.

Research being published on weblogs when this study was conducted included the mapping of network structure in the discipline field of social sciences (Nilsson 2003), analysis of conversational practices (Efimova & Moor 2005), evaluation of knowledge sharing tools (Paquet 2003a; 2003b), the weblog as a method of researching (Efimova 2004; Mortensen & Walker 2002), technologies for learning and personal web publishing (Fiedler 2004), rich media weblogs (Miles 2005), analysis of developing expertise in a range of computer skills (Dickinson 2003), weblogs as learning spaces in higher education (Williams & Jacobs 2004), and using weblogs to bridge learners' feelings of isolation (Dickey 2004). Published articles have since become abundant in refereed academic journals, although the content remains predominantly opinion-based and focused upon small-scale case study analysis, or hypothetical scenarios. Conference papers and informal scholarly communication through personal weblogs are now widely available and offer an alternative resource to peer-reviewed journals through a collaborative network of practitioners and researchers (Downes 2010a; Larsson & Hrastinski 2011).

Apart from the above-mentioned anecdotal reports and studies, at the time of this study, a review of the literature revealed there was limited published research on the systematic study of learners' experiences and processes of using weblogs in the development of learning networks. These gaps in the literature provided an opportunity to frame the research project to construct and examine a pedagogical framework that could offer scaffolding for facilitating the incorporation of self-publishing with weblogs, and in particular, the development of personalised distributed learning networks, in adult education settings.

The 5-Stage pedagogical framework

Details of the pedagogical framework (the 5SPF) and the relationship between development, practice, critical observation, and theory are expanded in Chapter Three.

The emergence of social software as an alternative option to the third party vendor or institution controlled eLearning products and LMS technologies in the early 2000s stimulated the investigation for the potential inclusion into both the researcher's professional practice but also eLearning subjects was commenced.

As early as 1999, from a professional practitioner's perspective, a number of weblogs were set-up (and abandoned) as I explored how to write publicly, how to develop a readership, and how to leverage the software capabilities. The early weblog software was limited by the available functionality, for example, simple HTML programming was required to format posts and the inclusion of media such as photos was not straightforward. The most frustrating limitation was the lack of notification of updates from other weblogs. Subscription by email or syndication via a newsfeed was not introduced until 2002, so this required a reader to keep a list of other weblogs (or blogroll) and visit the sites regularly to determine if any updates had been made. Developing a network of practice was limited by this process; however authentic, deep connections were made with other like-minded early adopters and researchers into social software and the use of weblogs that had a long-term, profound influence on my professional practice.

Based upon these early personal experiences and the professional connections made with other researchers and early adopters led me to attend social software conferences and to realise the exciting new affordances for learning through self-publishing. Following initial personal experiences and reflections on my areas of practice and research, social software was introduced into the eLearning subjects. It was intended as an opportunity for students to explore and evaluate the potential in comparison with existing eLearning technologies, practices, and theory. The outcomes of the early integration of social software into the eLearning subjects became the stimulus to further investigate the effect of technological innovation on the experience of the learners and the development of a pedagogical framework commenced.

The 5SPF was the principal constituent of the research study and is at the heart of this thesis as the pedagogical framework to create a teaching and learning environment where meaningful data could be collected that enabled the research questions to be answered. As highlighted above, the 5SPF was developed by the researcher from practice in 2002 and first presented at the 4th International Conference on Human Systems Learning at the Glasgow Caledonian University in July 2003 (Bartlett-Bragg 2003b). Subsequently, a peer-reviewed article was published in the *Knowledge Tree* online journal in December 2003, discussing the development of the model (Bartlett-Bragg 2003a). For a detailed explanation and graphical representation of each stage of the framework and its corresponding pedagogical strategies, see Chapter Three, Part 2, and a discussion of the theoretical perspectives that informed the development of the framework is presented in Chapter Three, Part 1.

Investigating the pedagogical affordances of self-publishing with social software was the inspiration for this doctoral research to determine the collective variation in the learners' experience. The 5SPF was pivotal for determining how the learners approached the use of social software and the process of developing a learning network. It was expected that by researching the learners' experience areas requiring further pedagogical attention to address the needs of the learners, both from social and technology support perspectives, would be revealed and further pedagogical opportunities identified.

1.3.1 Research aim and questions

The research was motivated by the status of eLearning, the context of the study, and the review of literature that indicated a need for a shift in emphasis towards an integrated pedagogical framework for the implementation of social software and a networked approach to learning. The research aimed both to find out how such a framework can enhance the learning experiences of students, but also to investigate the effectiveness and role of the educator. The outcomes from the research study were expected to demonstrate the flexibility of this approach as scaffolding for pedagogical strategies that allows educators to tailor the content at each stage of the 5SPF to address any subject, course, discipline or specific learning context.

The experiences of the researcher as a lecturer in the years preceding the research study had provided the opportunity to critically reflect on learner behaviours, underpinned by application of practice and theoretical review. However, the differing nature of social software in contrast with previous eLearning technologies, the unexpected behaviours being noted through the processes of self-publishing required an approach to the research aim that sought to uncover the learners' experiences as a group, rather than a set of individuals.

Firstly, understanding how the learners approached the task of establishing a DLN was expected to provide insights that would contribute to ensuring the pedagogical framework supported all aspects of this process. While identification of how the DLN was established would need to identify what the collective experiences of learning in a network, or the nature of their learning, influenced by both the process of setting up a DLN and what was the overall experience of learning in a network.

And secondly, reviewing the process and experiences of the learners as a collective, to determine the variation in their experiences, would enable a structural and referential review of the pedagogical framework with the intention to uncover how learning experiences could be further enhanced and the affordances of social software fully leveraged.

Research Questions

Based upon the research aim the following research questions were developed and applied to the study:

Research Question 1: How did the participants approach the task of developing a distributed learning network?

Research Question 2: What were the participants' experiences of the process of learning in a network?

Research Question 3: What were the participants' perceptions of the nature of their learning from online self-publishing?

1.3.2 Research outcomes

The 5SPF has been at the heart of the thesis and has ensured quality learning opportunities were afforded to all learners, regardless of their computer capabilities. It was the lens through which the data was made meaningful. The implementation of weblogs as the foundation for the development of DLNs was reinforced through the activities in the 5SPF, which produced rich sources of data to examine the learners' experiences. The integrity of the data collected, detailed in Chapter Five, outlines the processes that were followed through the methodological framework applied in the research and through phenomenographic analysis. The findings generated significant contributions and applicability in the current, transformative times of contemporary educational landscapes.

The findings have not only highlighted the essential role of pedagogy when integrating social software into learning environments, but also the role of educators and their potential impact on learners' experiences that led to successful implementations. In addition, the experiences of learners in a self-published, networked context have provided insight into the potential for future developments incorporating social software that could be adapted as a functional learning space in a variety of contexts.

1.3.3 Research participants

The research participants were drawn from four different cohorts of students. Three groups were studying at the undergraduate level in a university and the fourth group was completing a vocational education qualification in an organisational learning setting through the university's accredited vocational training centre. All participants were either working as organisational learning and development practitioners, or studying to become educators in a variety of professional workplace or vocational education situations. The participants were all studying eLearning subjects that were either a core subject within their degree or part of an eLearning vocational qualification. A detailed description of the participants is provided in Chapter Four, Section 4.3.2.

1.3.4 Limitations of the research

This research study contributes significant findings to the field of learning technologies, and although the study was conducted in 2005 when social software was in its early stages of development, the results are even more relevant today in the increasingly complex social software and networked environment than they were at the time of the study.

The scale of the study, encompassing four cohorts of learners within the same university faculty, over the period of a single semester, could be considered a limitation on the depth of findings. However, the design of the methodological framework, the richness of the data collected, and the depth of findings substantiate that the range of research participants, described in Section 1.3.3 in this chapter and in further detail in Chapter Four, have produced a diverse set of results that could not be achieved through traditional qualitative or quantitative research approaches; see Chapter Five, Findings and Discussion.

Replication of the study utilising the methodological framework and the implementation of the 5SPF would be straightforward and applicable to any current higher education institution, vocational institutions, or organisational learning context where the research questions retain their relevance and the selection of social software could be adapted to incorporate contemporary applications.

The identified limitations of the study are not considered substantial enough to diminish the significance of the findings and contributions to the field of practice.

1.4 Structure of the thesis

The thesis is presented in six chapters. Chapter One provides the context and background to the study by outlining the research purpose; the rationale for and significance of the research and context provide background to the study, incorporating the research aim and questions, including the research outcomes. The chapter also includes a visual timeline of social software development mapped to align with the research study milestones.

In Chapter Two there is a focus on research and literature relating weblogs in education that provides an extension to the contextual landscape of social software, and in particular weblogs, in higher education. A brief history and status of eLearning provides additional background to the drivers that accompanied the introduction of eLearning on an institutional scale. The chapter includes a detailed overview of weblogs from a technological and a social perspective that lays the foundation for the use of weblogs to develop DLNs in this research study. In particular, the capabilities and features of weblogs at the time are relevant to note, in contrast with the more sophisticated versions available today.

Chapter Three introduces the theoretical and pedagogical perspectives that were influential in the design of the pedagogical framework, the 5SPF. Details of the early versions of the 5SPF, based on critical reflection and literature review, are outlined. In Part Two of Chapter Three, the 5SPF is explained with descriptions of each stage of the framework and including an overview of the types of activities and theoretical influences that were employed.

In Chapter Four the methodological framework for the research is explained, including the original research design and methodological approach. Details of the research participants, the data collection and analysis methods, and the ethical considerations are outlined.

In Chapter Five the findings are presented and discussed. The chapter is divided into four parts and follows the phenomenographic iterations of the data analysis. A visual roadmap has been included in the introduction of the chapter to provide an overview of the analysis process, intended as a guide for the reader. Part 1 presents the first iteration of data analysis with the findings against each stage of the 5SPF, addressing how the research participants approached the task of developing their DLNs. Part 2 presents the second iteration of data analysis to develop the phenomenographic categories of description, while Part 3 incorporates the final iteration of data analysis to present the phenomenographic outcome space where the expanding themes of awareness are described and the implications for application of the pedagogical framework are discussed. In Part 4, a chapter summary brings together the findings and revisits the research questions and limitations of the study.

Finally, in Chapter Six the major contributions arising from the findings are distilled for the contemporary educational context to demonstrate their relevance and significance. A reflective stance looks both backwards at the state of eLearning and emerging technologies at the time of the study, and forwards at the theories and initiatives that have evolved during the time since the study was carried out and how self-publishing for learning in an online networked context has become a critical future capability for both learners and educators.

1.5 Timeline of social software and research study

The state of social software at the time of the research is outlined on the Timeline, Figure 1.1, to the left hand side of the date marker. The more popular or significant software applications have been named and highlighted, based on their release being made publicly available. Of significance to note is the number of what are now considered core software applications that were developed in the period directly prior to the research data being collected. In particular, 2003, where WordPress, which was used as the weblog software in this study, was released. Not all of these applications have survived the evolution undergone during the last decade, but the principles established by many of these have been influential in the self-publishing functionality of contemporary popular applications.

Additionally, the left-hand side highlights a number of key terms that are considered influential in the social software and eLearning contexts and the release dates of significant personal computing devices, such as the iPod and iPhone.

The right-hand side of the date marker highlights the significant events related to the research study and thesis development, including academic conferences where peer-reviewed papers were presented and journal articles or book chapters were published.

A significant change can be noted in 2005, when acceptance of social software as a mainstream set of technologies was acknowledged by nomenclature, that is Web2.0 and to a lesser extent eLearning 2.0 (Downes 2005). This indicated an acknowledgement that social software was more than a passing fad.

Alongside this step change, there is a view in the relevant literature that the principles surrounding the use and meaningful integration of social technologies are fundamental and have at their core the focus on the user or learner that is conditional to uptake and at the core of quality pedagogy (Downes 2007a, 2010a; Fiedler & Pata 2009; Rudd 2006; Siemens & Tittenberg 2009). This thesis presents a detailed and well-evidenced argument in support of this contention.

This timeline is a representative summary, it does not include all social software that has been released, nor does it include non-peer reviewed conferences or publications by the researcher.

Social software development related to PhD timeline

	Peer-reviewed conferences
	Peer-reviewed publications
	New terminology coined

2013

iPad mini — **2012**

Google+ — **2011**

iPad
Samsung Galaxy
Instragram
Pinterest — **2010**

Foursquare — **2009**

Android phone

"MOOC"
Siemens & Downes — **2008** — **EdMedia** Vienna

iPhone
Tumblr
FriendFeed — **2007** — **PhD** data analysis completed

Twitter
Facebook — **2006** — **BlogTalk ReLoaded** Vienna

"eLearning 2.0"
Downes   "Web 2.0" O'Reilly — **2005** — **BlogTalk DownUnder** Sydney
YouTube — **PhD Research data**

— **2004** — **BlogTalk2** Vienna
PhD commenced

MySpace
WordPress
TypePad
Movable Type
LinkedIn
Second Life   "Social Software" Shirky — **2003** — **BlogTalk1** Vienna
Delicious **A Virtual Promise: Human-System Learning** Glasgow
iTunes — **2002**

Wikipedia
iPod — **2001**

1999
Blogger
Live Journal — **2000**

This timeline represents key points in the development of the research project and relates it to the developments in social software.

Figure 1.1: Timeline of social software and research study

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1.6 Chapter summary

This initial introductory chapter has set out the aims of the research study while providing a background and context to the study. The justification for the shift in the approach to pedagogy that accompanied the introduction of social software in adult education contexts was presented. The aim to investigate the collective variation in the learners' experience of self-publishing and developing learning networks with weblogs was outlined. The outcomes from this study were expected to uncover the value of an integrated pedagogical framework that would fully exploit the affordances of social software in adult learning environments.

The overall structure of the thesis has been outlined and signposts provided for the location of essential topics in the development of the research study and outcomes.

Further issues relating to social software and learning networks will be progressed in Chapter Two. In particular, the weblog phenomenon and the use of weblogs in educational settings will be expanded upon to correlate the significance of self-publishing software and the development of learning networks.

Chapter Two
Weblogs in Adult Education:
The Contextual Landscape of the Study

2.0 Introduction

Theory and research are only as good as their ability to make sense of the observation of their subject matter.

(Castells 2009, p. xliii)

Proponents of social software believe the opportunities afforded have created the potential for new learning landscapes where the participatory medium with a user-centric information structure encourages exploration of ideas; where reflection becomes embedded learners' activities; and where the capability for new ways of sharing and collaborating with networks of others is causing educators to rethink the locus of control between educator and learner (Attwell 2007; Brown & Adler 2008; Conole 2013; Downes 2004, 2010a 2010b; Fiedler 2006; Hatzipanagos 2013; Mason & Rennie 2008; Oblinger 2013; Rudd 2006; Sharples et al. 2012; Siemens 2008; Stoerger 2013; Wesch 2008). Yet, re-examining the uptake of social software in the time since this study was conducted, there remains enormous potential to further take advantage of these opportunities.

New forms of web-based learning technologies have impacted the nature of how learners access information that challenges the traditional authoritative knowledge models of educational institutions (Liber 2004; Wesch 2009). These technologies empower the learners to research, create, manage, and organise their approaches to learning in an individual way, yet connected to others through powerful networks of hyperlinks, effectively personalising how they interact with not only the content of a subject, but also their teachers, classmates, and other interested parties beyond the boundaries of the classroom.

This chapter expands the contextual landscape outlined in Chapter One, by briefly reviewing eLearning from a historical perspective (Section 2.1.2) through the

development phases towards the introduction of social software and weblogs at the time of the study.

Further establishing the conditions of the study and the rationale for an appropriate pedagogical approach, a review of the weblog phenomenon (Section 2.2) will include a description of weblog characteristics and how weblogs were used in this study, a discussion about the nature of online learning networks, and a discussion about the contrast between discussion forums, weblogs and communities will create a distinction between popular uses of web-based learning technologies and associated pedagogies.

A review of published weblog studies at the time of study (Section 2.3) will be contrasted with more recent studies with a view to highlighting how practice has developed over the past decade and the unrealised potential and ad hoc nature of current practice where theory is still struggling to inform practice and pedagogical frameworks remain underdeveloped.

At the time of the study, evidence was drawn predominantly from opinion-based, small-scale case study analyses or scenarios, using qualitative feedback from students, or quantitative analyses of use, and observations of learner behaviour to substantiate the use of weblogs as a pedagogical strategy. Yet, as this chapter will show, there remains limited published research on the systematic study of learners' experiences and processes for using weblogs in the development of learning networks.

2.1 Context of the study

> *The medium, or process, of our time…technology is reshaping and restructuring patterns of social interdependence and every aspect of our personal life. It is forcing us to reconsider and re-evaluate practically every thought, every action, and every institution formerly taken for granted.*
>
> (McLuhan & Fiore 1967, p. 6)

Although the speed of social software development has exponentially increased in more recent times, the basic premise of social software has not altered: to enable self-publishing, sharing of information (now with enriched formats such as video and

audio), collaboration, and curation of content themes to connect with people across contexts without boundaries. Yet, practice remains focused on the use of new features or functions in new software types, more than the pedagogical value that underpins practice and enhances the learners' experiences.

If we view social software as a disruptive technology in the educational landscape, then the role of change and innovation could provide insight into the adoption patterns that will be noted in this chapter. A sociological theory, Diffusion of Innovations (DoI) (Rogers 2003), widely referred to when evaluating stages of adoption, describes five stages that have been applied to new technological innovations:

1. Knowledge

    Individual is aware of potential and inspired to seek more information.

2. Persuasion

    Individual forms favourable opinion and actively seeks more details.

3. Decision

    Individual reviews the information and makes decisions to adopt (or reject) change.

4. Implementation

    Individual employs innovation and may seek further information to determine appropriateness in their context.

5. Confirmation

    Individual confirms value of innovation and decides to continue with use.

The rate of adoption is based on an individual; however, the rate of diffusion relates to how quickly the innovation spreads amongst a group. To achieve extended diffusion, several individuals are required to adopt the innovation.

Conceivably, with the introduction of social technologies, we have not progressed to widespread adoption, leading to diffusion, which can be evidenced by the nature of published works; see Section 2.3.

2.1.1 A brief historical review of eLearning

eLearning began to evolve alongside the e-Commerce boom of the mid to late 1990s, with the advantages being heralded as learning available anytime, anywhere, and on-demand. Notwithstanding the hype of new technologies, it is important to recognise the driving business forces behind the uptake and growth of eLearning as an industry, which will be discussed in this section. Additionally, and perhaps more relevant to acknowledging the status of eLearning as the nomenclature for all internet-based learning at the time of this research study, is the continuing debate that related to the definition and application of the term. It is also important to note that more recently terms such as 'social learning' have been adopted to infer or relate to eLearning that uses popular social media platforms such as Facebook, Twitter, and YouTube. This use of social learning is not supported in this thesis where the term 'social learning' will be used to encompass the theoretical perspectives of writers such as Bandura (1977b) and Vygotsky (1978). A clear distinction will be identified that supports the shift away from eLearning to a more encompassing terminology that is associated with the core underpinning assumptions associated with the definitions.

A search for a definition of eLearning through Google, in May 2010, displayed nearly eight million results. And now, in July 2013, the result is closer to sixty-five million. In an attempt to determine key aspects of commonality and difference, a review of prominent eLearning reports revealed a selection of definitions outlined chronologically below:

- 'e-Learning is instruction that is delivered electronically, in part or wholly – via a Web browser, through the internet or an intranet, or through multimedia platforms such as CD-ROM or DVD' (Hall 1997, p. 6); and

- 'e-Learning as instruction accessed electronically on a computer. The 'e' represents the means by which we receive or access learning – electronically, typically on the Web (online) via a Web browser' (Clark & Mayer 2003, p. 13).

Alternatively, Zemsky and Massy (2004) categorised eLearning into three broad domains:

- eLearning as distance education where learning is distributed electronically;

- eLearning as facilitated transactions software where the development and management of courses is through applications like learner management systems; and

- eLearning as electronically mediated learning where the learning materials are central to the concept, rather than their distribution.

Similarly, the Organisation for Economic Cooperation and Development (OECD) Policy Brief (2005) described four scenarios as constituting eLearning:

- web-supplemented courses that focus on classroom teaching but include lecture notes available online, links to resources and use of email communication;

- web-dependent courses that require learners to use the internet for activities such as discussion forums, assessment tasks or quizzes, project and collaboration activities but still maintain classroom attendance;

- mixed-mode courses where eLearning activities are used to replace some classroom time but physical attendance remains an important part of the mix; and

- fully online courses where no physical classroom attendance is required.

Additional terms commonly associated with eLearning include: computer-based training, online learning, distance learning, web-based learning, flexible learning, mLearning and blended learning, some of which pre-date eLearning terminology (Friesen 2009). However, are they all referring to the same type of eLearning? According to Tsai and Machado (2002), '…the discriminating features must be the primary characteristic of the learning activity'… (para. 11). In principle, based on these criteria, early definitions of eLearning have focused on the distribution and delivery of learning using the internet in a transmission – acquisition mode of directed teaching.

Based on the early definitions, it is not surprising that in adult learning contexts, early implementations of eLearning focused on delivery, accessibility, and the distribution of content to learners anywhere, anytime. Large investments of resources were made in technical infrastructures such as LMS to improve administrative functions, while managing and distributing online courses. There was an expectation these initiatives

would result in improved productivity, delivery and workplace efficiencies through these eLearning implementations.

The advantages of these strategic directions espoused by institutions reinforced the focus on administration efficiencies. These were expected to be the following: that learner administration costs would be reduced; that the distribution of information could be rapidly delivered to learners; that the cost of facilities such as classrooms would be reduced; and that content would be available on demand and delivered when the learner needed it. It was also argued that there would be greater consistency of the learning materials being distributed to larger numbers of learners.

Despite the claimed benefits, there is little evidence to suggest that incorporating these strategies and technologies into existing learning environments had resulted in any significant change in achieving learning outcomes (Zemsky & Massy 2004). Learners lamented a loss of communication and de-personalisation of content (Sanders 2006) and continued to attend scheduled classroom sessions even when offered alternative delivery methods, such as podcast lectures (Alexander 2006).

Moreover, not all eLearning implementations had followed the more popular LMS administration and distribution model. A less commonly discussed divergence in approach had evolved in parallel through synchronous technologies, or live events, that had been in use since the late 1990s and ranged from video-conferencing, webcasts or broadcasts using the world wide web, webinars or web-seminars that included highly interactive options available for all participants, to the more simple online chat sessions for brief exchanges of information. Limitations caused by scope of institutional technology infrastructure, the cost of these technologies, the management of different time zones, and the organisation of participants so as to be available at specific times and places had initially reduced the popularity of these technologies for educational institutions and corporate organisations. Nonetheless, substantial increases in the widespread adoption of synchronous sessions since 2005 indicate the recognised value of real-time social interactions, and direct contact with other learners, educators, and experts (Pulichino 2005).

At the same time as eLearning implementations were focusing on achieving efficiencies with eLearning practices, since the early 2000s, options in the learning landscape had

been evolving with emerging technologies, particularly in the social software range, offering alternative approaches. Often referred to as a sub-set of Web 2.0 (a term coined in 2005 – see Definition of Terms above), these online technologies had developed further with enhanced features and capabilities that enabled learners to create, publish, distribute, and subscribe to information in a socially networked, yet personalised manner.

In 2005, Stephen Downes coined the term 'eLearning 2.0' in acknowledgement of the advancements in learning technologies, and in an attempt to differentiate the social aspects made possible with the inclusion of social software in eLearning strategies. Downes (2005) described an adapted approach to learning where learners are required to create and to distribute content in a ubiquitous computing environment rather than conform to the controlled, centralised distribution of eLearning 1.0.

The affordances of Web2.0 were the catalyst for eLearning 2.0. Through the social augmentation of user-generated content, re-using and re-mixing of content, engagement with other learners and experts, the curation of personalised learning resources and the capability to tag, bookmark, and share these items resulted in educators supporting learning-centred interactions to create new learning environments (Anderson 2008a).

An updated definition of eLearning from Woodill (2007) reflected the shift in focus away from technology as solely a delivery or management tool: 'e-Learning is not a set of technologies. It is also not a set of online courses or other 'content' followed by a test…it is a complex mix of physical and social technologies, applications, activities…designed to teach and…helps support the entire e-Learning experience' (p. 3).

In Table 1.1, a comparison is given of characteristics of the early approach to eLearning implementations and the eLearning 2.0 approaches enabled by the integration of social software.

Table 2.1 eLearning Approaches

eLearning 1.0	eLearning 2.0
Learning philosophy: transmission-acquisition	Learning philosophy: learner-generated, personalised
Centralised	De-centralised
Controlled	Flexible, self-managed
Metrics driven – outcome / results focused	Negotiated / agreed outcomes
Individual, isolated	Networks and relationships
Learner Management Systems (LMS)	e-Portfolios or Personal Learning Environments (PLE), Distributed Learning Networks (DLNs)

eLearning 2.0, facilitated by social software, provided educational institutions and organisations with the opportunity to reignite the personal element of learning, enrich the learning experience, and reconnect the learner to networks of people that allowed learners to be more flexible and responsive to the changing demands and needs of their current environments.

The European Learning Industry Group, formerly the e-Learning Industry Group, took a strategic decision in May 2007 to drop the term 'e-Learning' from its title, reflecting an indication that technology was now an established element of adult learning environments. The rationale was based on the group's concern that the term was no longer useful as an identifier or discriminator of learning activities, and in recognition that technology was now embedded in all learning contexts. European Learning Industry Group's decision was intended to position the group as an innovative partner to leverage the capabilities of technology as the learning industry continued to evolve (Chief Learning Officer 2007).

More recently, the University of Northampton (2010) indicated a modification to previous definitions by describing eLearning by stages:

– Informative stage that focuses on the provision of information from an administrative perspective;

– Integrative stage where online communication and activities replace some face-to-face contact; and

– Transformatory stage that provides an online community with innovative resources and ways of collaborating.

A current study to determine an inclusive definition of eLearning was published in 2012 (Sangra, Vlachopoulos & Cabrera 2012) in an attempt to provide a conceptual framework for the different models where eLearning is developed and practised. Their literature review was limited to publications in or after 2005, arguably only representing the most recent practices. However, the findings identified four categories where the focus of eLearning definitions is either:

1. Technology-driven that relates to the equipment and use of it for learning;

2. Delivery system-oriented that centres on distribution and accessibility of resources for learning;

3. Communication-oriented where the focus is on interactions, collaboration in learning; or

4. Educational paradigm-oriented which views eLearning as a new way of learning or augmenting existing approaches.

A Delphi survey of fifteen experts in the Sangra, Vlachopoulos and Cabrera (2012) study failed to achieve consensus for an inclusive definition of eLearning. But recognition of the shifting nature and acknowledgement of multi-disciplinary definitions was recommended with an understanding that eLearning is far more than just a technology description, and that it needs to include ways of teaching and learning.

The struggle to determine an agreed definition and the location of ownership for eLearning in a field or discipline could be viewed as symptomatic of the current state of adult learning and higher education institutions. The issue raises the need to categorise new forms or approaches to learning into something that separates them from other learning activities, further reinforcing the comparative measurement practices to determine improved learning outcomes or financial viability models against the opportunity for innovation and increased learner engagement.

The challenge posed by this situation for eLearning has significant consequences for the integration of social software into learning contexts. Does the term 'eLearning 2.0' adequately distinguish the differences between not only technology but also the pedagogical approach for learning with social software? As mentioned above, the attempt to differentiate the use of popular social media such as Facebook, YouTube, and

Twitter, in learning contexts by labelling this approach 'social learning' has done a disservice to the well-established social learning theories by focusing on the software tools as a key point of separation from eLearning. If learning contexts with social software become a subset of eLearning, there is a risk that the same administrative and economic drivers will inhibit the potential offered by these new technologies – perhaps this situation is already evident in the low levels of adoption.

The following section outlines the uptake of eLearning across adult education contexts globally and in Australia. Organisational or workplace learning and vocational education results have been included in the Australian context, as this sector has actively traced the uptake of eLearning, in contrast to the tertiary sector where overall use of eLearning technologies is not widely publicised.

2.1.2 The status of eLearning from the time of the study

In 1999 only 8% of organisational training in the United States of America (USA) was delivered by technology. By 2005, that figure had increased to almost 38% (American Society of Training and Development 2006). There was a dip in implementations until a resurgence in 2011, when 40% of formal learning was delivered by technology including mobile devices (American Society of Training and Development 2012). The Australian organisational experience has been very similar; however, reports comparable to the USA are not published in Australia about workplace learning. On the other hand, the vocational and technical education (VTE) results are contrary and demonstrate a slow level of uptake. In 2005, the use of eLearning activities was 6-8%, increasing to 17% in 2006 (Australian Flexible Learning Framework 2006). The results for 2009 showed a steady increase had continued with 39% of VTE activity involving eLearning and 60% of educators commenting that eLearning created a more engaging learning environment for students (Australian Flexible Learning Framework 2009). The results from the most recent study conducted in 2011 showed a profound increase where now 82% of VTE includes some eLearning in their courses, while over 40% had used Web 2.0 technologies (Australian Flexible Learning Framework 2011).

From a tertiary education perspective in Australia, comparable studies reporting uptake of eLearning technologies were not readily available. However, a number of more

recent Australian studies provide an indicative position through analysis of student attitudes and use of technologies for learning (Kennedy et al. 2008; McNeill et al. 2011; Gosper et al. 2013). Further commentary related to student expectations and use of technologies within their educational setting will be incorporated in Chapter Six where the findings from these studies will be reviewed.

A Policy Brief by the OECD (2005) on eLearning in tertiary education highlighted that eLearning had been an administrative success, although there were only 5% of enrolments across 13 countries fully online, despite 30 – 50% of institutions claiming a high online presence in their teaching and learning strategies. The report indicated that although 'e-Learning has not really revolutionised learning and teaching to date…' (p. 4) there is unsubstantiated acceptance that it has had a positive effect despite a prevailing doubt about its pedagogical value that has limited further growth. Essentially, the OECD report had focused on evaluating the success of eLearning in administrative terms rather than in relation to learning outcomes for participants. No further comparable research has been published by the OECD to establish any changes or shifts in this policy.

A review of the literature highlighted the evaluation of eLearning as primarily focused on a comparison with existing, traditional learning practices, rather than an analysis of the ability of eLearning to achieve intended goals or outcomes for participants. While opponents of eLearning at the time used these comparative statistics to declare the downfall and invalidity of eLearning as the pedagogical breakthrough that had been expected, they were not able to deny the ubiquitous use of the internet to distribute information and connect learners with networks beyond the boundaries of the classroom. Perhaps their didactic methods were challenged by the potential democratisation of learning. Increasingly, it will be difficult to resist the learners' demands for access to rich media and social interactions with both content and other learners.

Published reports indicate learners had commented that technology was having a positive impact on their learning and motivation, and the increased likelihood of their completion of a learning program (Cooper 2007; Australian Flexible Learning Framework 2011). Furthermore, learners had acknowledged gaining increased computer literacy skills and valuing the potential of enhanced employability as a consequence of

technology being integrated into their learning environments (Australian Flexible Learning Framework 2006 & 2011).

Nonetheless, as the figures indicated, the growth of eLearning had not revolutionised the classroom experience. Use of technology remained constrained to modules, courses or supplementary activities frequently delivered through the institution's LMS. However, while there are noteworthy examples of innovative practice in isolated pockets across all sectors of adult learning, there have been few pedagogical models based on systematic research to provide educators with a functional adoption strategy. Scepticism still remains about the pedagogical value of eLearning and is one of the key barriers to adoption, along with the lack of suitable technology infrastructures and insufficient funding initiatives.

The following sections will review the emergence of weblogs as they gained popularity as a self-publishing platform in the early 2000s and more specifically, as a learning technology.

2.2 The weblog phenomenon

> *A good weblog on any subject provides a combination of relevance, intelligent juxtaposition, and serendipity.*
>
> (Blood 2002, p. 12)

Since the early 2000s, the weblog has attracted considerable attention – both positive and negative. The uptake of weblogs has undergone an explosive growth, making it difficult to ignore the significant impact weblogs are having in a number of fields, notably the attention from the mainstream media and social commentators on citizen journalism and the uptake by popular consumer brands as a core platform to communicate with customers in their marketing strategies. In educational contexts, as will be shown in this section, the shift towards the widespread adoption of weblogs has moved at a slower pace.

In 2003, the Oxford Dictionary added the word 'weblog' and 'weblogger' and in 2004, Merriam-Webster's declared 'blog' as the word of the year (2004), and officially listed the word as both a noun and a verb.

In January 2005, Fortune magazine declared the weblog as the No. 1 Trend to watch in 2005 (Kirkpatrick & Roth, 2005), followed by BusinessWeek in May 2005 predicting in an article titled 'Blogs will change your business' that '…they're simply the most explosive outbreak in the information world since the internet itself' (Baker & Green, 2005, p. 45). In 2008, BusinessWeek reviewed its 2005 edition and declared the updates a correction to reflect the current state of weblogs, with the article now titled 'Social media will change your business' (Baker & Green 2008). The adjustment reflected the variety of social media tools available, with weblogs being only one of the choices. The social software timeline (see Figure 1.1) in Chapter One illustrates the rapid increase in alternative social software options.

A Google search on the word 'blog' returned 558 million results (accessed 2 February, 2006); in 2010 the same search produced 2,350 million results, while Technorati, a search engine that tracks blogs through link activities, was tracking 27 million active blog sites (accessed 2 February, 2006). At that time, Technorati estimated about 70,000 new blogs were created a day, 700,000 new posts daily – which equated to 29,100 blog updates an hour. In addition to bloggers – people who write blogs – a study by Pew Internet (Lenhart et al. 2004) estimated that 11% of internet users, or about 50 million, are regular blog readers.

Currently, there is no single source that can provide an accurate figure that reflects the number of active weblogs; however, the Nielsen NM Incite Social Media report (Bannon 2012) state that they tracked over 181 million active blogs in 2011. More recently, WordPress, the software platform used in this study, reported over 100 thousand new weblogs created on their platform everyday in September 2013, with users creating approximately 35.4 million new weblog posts and 61.2 million new comments each month (WordPress 2013).

Determining the uptake of weblogs in education is difficult due to the variety of weblog software options and how individual institutions have or have not integrated software into their existing technology infrastructure. However, Edublogs, a WordPress powered

educational weblog provider founded in 2005 as a result of the success with this research study, is hosting more than 2 million weblogs (Edublogs 2013). A recent survey released by Edublogs (Waters 2013), 'The State of Educational Blogging 2013', found that only nine per cent of respondents were from higher educational institutions, while the majority were school-based from elementary through to secondary, with only six per cent being Australian-based institutions. Of particular interest in the survey was the range of uses cited by the respondents, from weblogs for class collaboration; individual student weblogs; ePortfolios; book review sites; class websites; to professional/personal development. In the classroom setting, reflective writing tasks, both on an individual and a group basis, were the highest use at forty-three per cent.

The Horizon report produced since 2002 jointly by Educause and the New Media Consortium conducts research into educational technologies with the stated purpose to drive innovation across institutions by identifying predictions of emerging technology trends and the likelihood of uptake within the near, medium, and long-term or far horizon timeframes.

A review of reports published from 2003 – 2008 revealed the first mention of social software or related concepts was in 2004 (New Media Consortium 2004) with a far horizon (three to five years) prediction of knowledge webs being integrated into some disciplines (but not campus-wide). The knowledge webs were described in terms of closed communities of practice sharing research papers. The software options did mention weblogs but referred to multi-author, community style weblogs and their underdeveloped features, at this point in time.

In 2005 (New Media Consortium 2005), a significant shift mentioned social networks, alongside knowledge webs, in the far-term horizon with the concepts of knowledge sharing and collaborative learning cited as the main benefits. By 2006 (New Media Consortium 2006), social computing tools (specifically weblogs) were promoted to near horizon adoption of one year with widespread campus adoption being predicted. A notable advance on the previous two years, the report comments that social computing was no longer a novel concept and that the introduction of personalised tools and collaborative learning was critical to educational settings. However, the report highlighted the challenge was for institutions to find ways to scale successful, small-scale implementations into widespread adoption strategies.

By 2007, the Horizon report (New Media Consortium 2007) identified user-generated content and social networking in the near horizon predictions with the key challenge identified as the disconnect between students and faculty in regard to the use of these technologies. However, in the 2008 report (Johnson, Levine & Smith 2008), neither of these topics appeared on any horizon. The critical challenges again highlighted the disconnect between students' and teachers' skill levels with the use of emerging technologies; however, no further mention of social software was apparent.

This section has drawn attention to the widespread and rapid uptake of weblogs in a number of sectors across society – from personal use, through to some areas of business. A significant factor is the apparent difficulty to determine uptake in the education sector, with the lack of available data making it challenging to accurately understand how widespread the integration of weblogs has been into institutions. Section 2.3 in this chapter will examine this situation further, with a review of published papers indicating that adoption has not reached a level of diffusion as described in the DoI theory (Rogers 2003).

2.2.1 What is a weblog?

Why are they so popular? And why should the education field be taking notice?

> …a weblog can be anything from a journal to a stream of consciousness commentary or even a full-blown news site. The important features are a steady stream of fresh content and a willingness to link to other existing sites as a raison d'être. Think of the Captain's log on Star Trek and how it usually served to introduce and frame the upcoming story, and add in a very quick feedback loop…For the most part, weblogs are simple and straightforward. People can publish their thoughts, even for the first time, with almost no training …. (Chromatic et al. 2002, p. 2)

The word blog is attributed to John Barger in 1997 (Paquet 2003a) as a log of the web or weblog, thus blog, with claims of early weblog sites dating back to 1996 (Blood 2000). In its simplest form it is a website with dated entries, presented in reverse chronological order, and published on the internet. However, descriptions of weblogs

which allude to them as an alternative to a personal web page oversimplifies both the content and the process of communicating through blogging. Personal web-publishing, enabled by weblog technology, provides people with little or no technical knowledge or programming skills the ability to use the internet as a means for publication, social networking, personal knowledge and information management, and collaboration (Efimova & Fiedler 2004). Further discussion in Section 2.3 of this chapter will review other weblog studies and the implications for educational practice.

To further clarify the weblog phenomenon for the purpose of this study, it was valuable to divide the definition into two parts: its technical aspects or functional definition, and its social aspects.

The weblog – a technical definition

The technical or functional definition addresses the features of the software. As previously outlined, a weblog is a website, generally published by a single author (although some group weblogs exist), displaying dated entries in reverse chronological order, and which could be considered as a lightweight content management system – a form of database with pieces of content (or posts) stored in categories and date-related archives created by the user. The additional features that have developed in response to the demands of bloggers – and have continued to expand the functionality since the study was conducted – are briefly outlined:

- **Archive of posts:** All posts (or dated entries) are preserved in an archiving format, generally by month, with most weblogs displaying the current month on the main or front page. The archives allow both the weblogger and reader to easily access previous posts.

- **Categories:** Each post can be tagged by a label of the weblogger's choice. Multiple categories can also be assigned to posts. The categorisation of posts allows the weblogger to effectively manage the content in an easily retrievable form of micro-content management. Additionally, readers of the weblog may only be interested in posts relating to one or two categories, rather than the entire weblog content, and clicking on the category of interest will display only posts tagged with the nominated category.

- **Permalink:** Each post in a weblog is assigned a unique URL that facilitates the viewing and/or retrieval of an individual post. The permalink has enabled the efficiency of the hyperlinking structure that is fundamental to the ecology of the blogosphere, or network of webloggers.

- **Comments:** A comments feature can accompany each post, if the weblog author chooses to accept feedback from the readership. Readers can simply type in their views and submit the comment, similar in concept to Letters to the Editor in print media. Most weblog software currently employs a moderating feature that allows the author to review the comment before permitting it to be publicly published; this has become essential with the increase of spam appearing in comments.

- **Link lists or Blogrolls:** The links list appears permanently on the main page of the weblog, generally as a side-bar. The author uses this as a list of referral links to other weblogs the author reads regularly, similar to a reference list or frequently visited sites list. Readers also gain value from the lists displayed on weblogs; they can be viewed as a list of sites to visit that the author considers valuable or influential to their thinking and writing, making the links not only referrals, but also able to be considered a source of personal recommendations.

- **Trackbacks and Pings:** The trackback feature was designed to provide a method of notification between weblog authors. It is used to notify another weblog author that you have written about a particular post on their weblog – it is a method of person A saying to person B, 'This is something you may be interested in'. To do that, person A sends a TrackBack notification to person B. The notification is called a ping – the alert is frequently received in email format. This feature is essential in the underpinning process of developing and maintaining dialogue across distributed weblog conversations within a network.

- **RSS and Syndication:** Most weblogs have the ability to publish content in a format known as RSS or Really Simple Syndication. This format encodes the content so that it can be harvested into websites called RSS readers or aggregators. These will automatically check for updated feeds from subscribed weblogs (now present on many websites). The function allows readers to easily

monitor an overview of new posts, without having to navigate to individual sites they want to read regularly.

- **Personalisation of layout:** All weblogs hosted by a web-based service offer a number of template or page designs, called blogskins. These can be easily changed and modified by the weblogger without the need for sophisticated programming and web layout skills. The individualisation of the look and feel permits the weblogger to express their personality and portray an indication of the site's purpose to their readers.

Figure 2.1 is a mocked-up example, or wireframe, of a typical weblog main page used in this study that illustrates some of the technical features listed above.
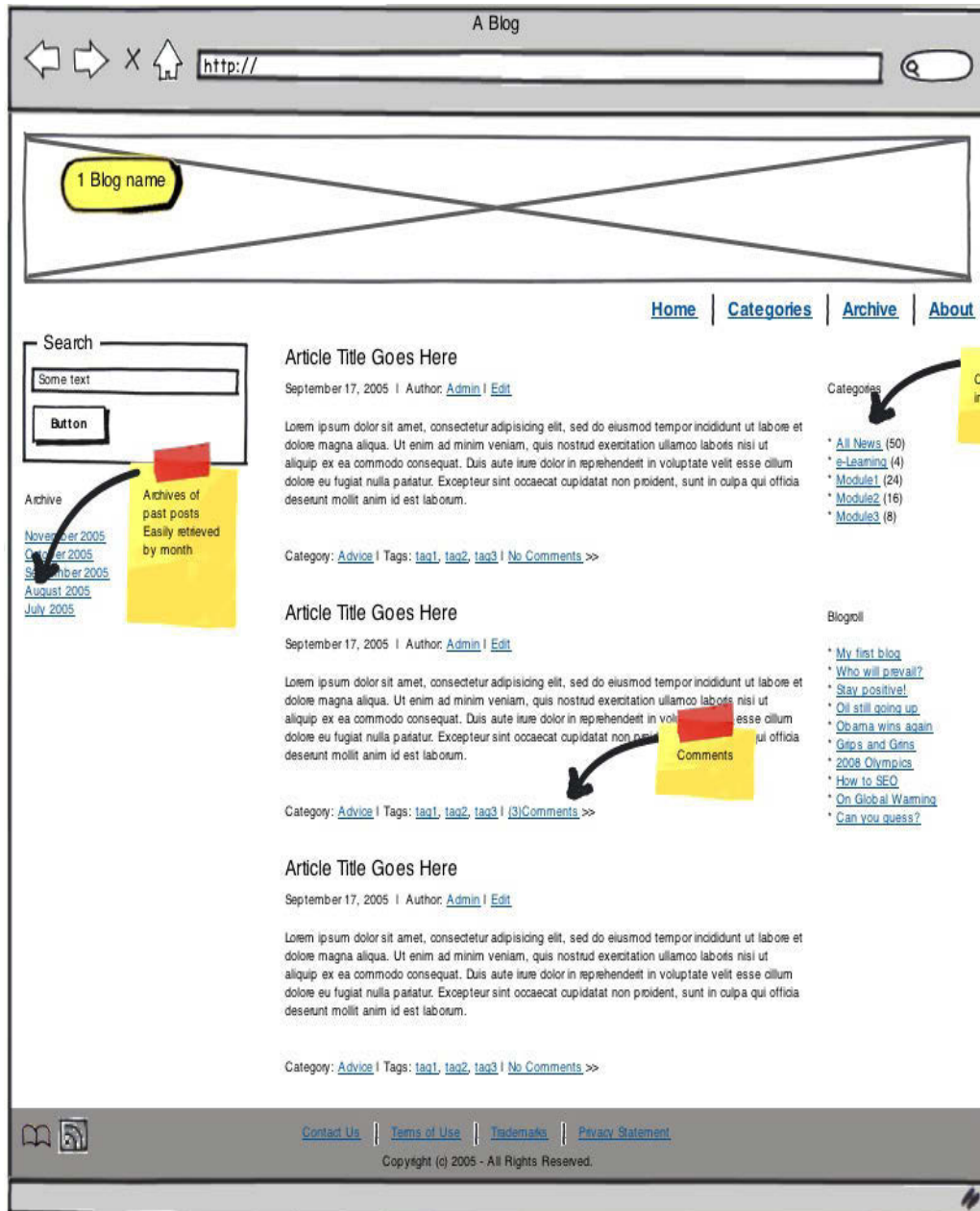
Figure 2.1: Weblog wireframe

Arguably, the rapid growth in the popularity of weblogs can be attributed to the ease of use with no programming skills required and free web-based hosting services. Effectively, anyone can set-up and publish a weblog for free within a couple of minutes. At the time the study was conducted, some lightweight HTML programming skills assisted the research participants to format their posts. Currently, this level of knowledge is not required, with enhancements that include a rich text editor (enabling formatting similar to word processing software) and the ability to embed rich media in

posts, such as videos, podcasts and photos hosted externally on third party providers such as YouTube.

Another outcome of significance from the technical features created by weblogs is a form of granularity in the writing process. Granularity is a term associated with hypertext literature that refers to the 'scale of units used within a larger system' (Miles 2005, p. 3). The smaller parts (posts) of a weblog, in an apparently piecemeal structure including hyperlinks to other parts (other weblog posts, web pages, references or rich media), create a granular form of networked writing that is a feature of distributed networks. Many individual parts, interconnected by hyperlinked posts, in a non-hierarchical, multi-linear manner, create the blogosphere or the intellectual cyberspace inhabited by webloggers (Quick 2001).

Blood (2002) observes that the hyperlink has been the fundamental attribute of the web, and weblogs link to everything that is contextually important – whether complementary or oppositional – and it is this function that is the single most important factor distinguishing weblogs from traditional forms of web publishing or static web pages.

The weblog – a social definition

> *A coffeehouse conversation in text, with references as required.*
>
> (Blood 2000, p. 1)

Weblogging can be viewed as a complex genre of communication. The social physics of the blogosphere, comprising an infinite variety of people, both readers and writers, supports the structure of network evolution that develops through the ecology of links. The social networking features of weblogs and the collaborative space that is created by the personalising of content has been recognised as the basis for the human or social dimension to the weblog phenomenon (Miles, 2005; Blood, 2002; Bruns & Jacobs, 2006).

The social aspect of weblogging can be studied from two perspectives: the individual and the network or collective perspective.

Individual perspective

- **Creation** – publishing of content selected by the individual as significant or relevant and written with a personal voice.

- **Collection** – management of personal content in a searchable, categorised, archive of posts.

- **Context** – applying commentary to the content that is published and managed.

Network perspective

- **Connection** – discovery of others with associated interests.

- **Conversation** – engaging in dialogues on an internet -wide basis.

- **Community** – building networks around shared themes and interests.

- **Collaboration** – sharing ideas and building knowledge.

Weblog conversations enable the interplay between articulating ideas in a personal space and then cross-fertilising them in a social space in the form of perspective-making and perspective-taking. It is this discursive nature of weblogs that facilitates the development of personalised DLNs and was the focus of this research study.

Categories of weblogs

Cutting across the technical and social dimensions of the definition are three broad categories of weblogs that were typical of weblog usage at the time of this study, as observed by Blood (2002):

1. **Blogs:** short form personal journals or diaries of opinions;

2. **Notebooks:** longer posts where the content is more focused – writing is short essay style and appears more edited. Can be specific topic-related such as professional practice or academic writing; and

3. **Filters:** editors or curators of content collect links to other sites with the intention to share their world – can appear in the form of a newsletter including editorial comments.

Typically, educational weblogging combines a notebook and filter style that accommodates the personal opinions of the author / editor, and creates a dynamic self-

publishing space, publicly available on the internet, which was the form of weblog style adopted for this research study.

By 2008, the variety of weblog use had expanded far beyond the three categories Blood (2002) described. Simons (2008) published a taxonomy of blogs in an attempt to clarify and represent the impact of weblogging in the media landscape. Simon's list takes a myopic view of the traditional media perspective and neglects to recognise the use of weblogs as a professional writing space, academic journals or their potential in the context of learning. However, it provides a view on the broadening usage of weblogs and potential for further opportunities in the self-publishing context.

Following is Simons' (2008) taxonomy of blogs:

- **Pamphleteering** – based on the traditional printed pamphlet, an individual or group weblog where a case is being argued, or a cause being pushed.

- **Digest** – a guide or summary of information that can be obtained elsewhere, using the hyperlink functionality in a form of curation of content.

- **Advocacy** – established advocacy groups concerned with a single topic or cause.

- **Popular mechanics** – advice and/or training in a specialist field, for example similar to a gardening magazine or hobby-related site such as digital photography.

- **Exhibition** – used by writers, artists, or craftsmen to display their work to a wider audience; can be published by an individual or group.

- **Gatewatcher** – specialists or experts with knowledge of public events who hold to account the traditional media or government. Traditionally a journalist's role, now expanded into the public domain.

- **Diary** – personal diary, intended to be shared with family and friends. This aligns with Blood's (2002) 'blog' category.

- **Advertisement** – used by consumer brands to promote their products. Alternatively, an individual high profile blogger is paid to write product reviews on their personal weblog.

- **News** – Alternative outlet for traditional news media, often managed by a group of journalists. This category can also include the hyperlocal or community newsletter or sports club newsletter style weblog.

The variety of uses for weblogs represented in the categories above indicates there is widespread diffusion of weblogs, which have evolved further into mainstream usage since the commencement of this study. Many established print publications, for example Scientific American (http://blogs.scientificamerican.com/), accompany their online sites with weblogs that extend the authorship and interaction with audiences in a way that was inconceivable a decade ago. In contrast, only a small number of academic journals approach the use of weblogs for academic peer-reviewed publishing in this manner (Perakakis 2013).

In the following Sections 2.2.2, 2.2.3, and 2.2.4, the use of weblogs in the research study will be described, contrasting the weblog with other forms of web-based tools available at the time.

2.2.2 How and why weblogs were used in this study

The collective power of thousands of weblogs enables them to become more than the sum of their parts.

(Hiler 2001, n.p.)

As indicated above in Chapter One, Section 1.3, the weblog was selected as the core platform for self-publishing in this study. The diversity of uses and flexibility, along with the relative ease of use, has been highlighted in the preceding Section 2.2.1.

The initial implementation of weblogs into university subjects prior to the commencement of the study had revealed the use of weblogs as a self-publishing tool that facilitated the emergence of conversations and subsequent development of networks. Each weblog post had the potential to trigger a reaction from others in the form of comments on the original post or other posts being created that link to it (Efimova & de Moor 2005). As every weblog developed a readership, the conversation

evolved and the small pieces become loosely joined and dynamic, creating distributed conversations or DLNs (Weinberger 2002).

In this study, each student set-up and managed their own weblog. The weblog was used like a published paper-based journal or magazine, where the author (student/research participant) was also the editor and main contributor. Each article (or post) had a section for comments where readers could voice their opinions – like a Letters to the Editor section – and these were moderated to ensure no spam or inappropriate material was published. Students were advised how to adhere to normal 'rules' of publication – copyright, plagiarism, privacy and defamation – and developed their own code of ethics for responsible publishing, while a readership was developed individually within a selected network of weblogs that reflected a connection to the main topic or focus of their journal. The weblog software application at the time (WordPress), also allowed interested readers to be notified (like a subscription service) through RSS webfeeds when a new article or post was published, further increasing the likelihood of ongoing, regular readers.

A number of factors distinguished the use of weblogs from alternative web-based learning technologies at the time, such as the asynchronous discussion forum embedded within institutional LMS. The asynchronous discussion forum does not afford: individual ownership and responsibility for the site; personalisation of design – look and feel; personalisation of content and information management; variety of interaction formats, such as length of weblog post, inclusion of images, and comment functionality; and publicly available on the internet, as opposed to the discussion forum that was closed by subject or class cohorts.

The personalisation and ownership features of the weblog shift the responsibility for the site and the locus of control to the learner, which in turn required a shift in pedagogical approach. Publicly published work made it available for wider examination and interaction with others, creating distributed conversations, factors noted not only in the early versions of the pedagogical framework development but also by other authors (Efimova & Fiedler 2004; Wrede 2003).

The difference with content that is user-generated and posted to their weblogs is that it affords the learner the opportunity to curate and manage their information (Efimova &

Fiedler 2004), while (Dickey 2004) noted the positive increase in self-directed, reflective learning practices. The nature of these interactions and learning activities had also been recognised in the early use of weblogs in my practice (Bartlett-Bragg 2003a, 2003b). This contrasts with the style of interaction and pedagogical approaches employed in discussion forums where the content and management of information is posted and led by the lecturer.

An explanation of the design of learning activities incorporated in the 5SPF is found in Chapter Three, Part 2, while Chapter Four outlines the design of the research methodology and how the use of weblogs, as described in this section, provided the research design a rich source of data to address the research questions.

2.2.3 Weblogs and learning networks

I think that what continues to be exciting about online social networks is that people have the power to build them themselves.

(Rheingold 2002, p. 195)

Inconsistencies in terminology and lack of shared meaning across disciplines writing and researching social software and learning technologies has created a barrier for effective communication and an obstacle for knowledge sharing. Sebastian Paquet noted these issues in his thesis on knowledge sharing across disciplines and the use of weblogs in 2003, where he commented that the confusion of terminology was resulting in '…frequent reinventions of the wheel' (Paquet 2003b). The situation appears to have deteriorated further since then, with a number of terms remaining in contention.

For an emerging field of research such as the weblog and associated social software applications, the issue becomes significant as writers attempt to reach broader audiences and the effect of misinterpretations of terms may result in critical aspects of the work being inappropriately critiqued and outcomes applied unsuitably to practice.

Of particular relevance to this study was the definition of networked learning, learning networks and distributed learning. To consider the usage of these terms it is necessary to consider the nature of the internet and the formation of networks through the hyperlinking process. David Weinberger, Research Fellow at the Berkman Center for

Internet and Society at Harvard Law School, commented that the web has enabled '…a self-organizing, self-stimulated growth of contents and links on a scale the world has literally never before experienced…' (2002, p. ix), the result of which is the basis for his proposition of a unified theory of the web, many small pieces loosely joined that create a collection of ideas, which is also a central proposition of this thesis.

Distributed networks refer to the distributed nature of knowledge within the make-up of a social network structure, where the knowledge is shared across a community. It is not a matter of something becoming knowledge, and then being distributed; insofar as it has come to be held as knowledge, it must be distributed (Cuzzocrea & Bellas 2004; Downes 2007a, 2007b).

Conversely, Goodyear et al. (2004) defined networked learning as: 'Learning in which information and communication technology (ICT) is used to promote connections: between one learner and other learners; between learners and tutors; between a learning community and its learning resources' (p. 1).

Seemingly, the term in contrast here to the previous treatment is 'network'. In Goodyear et al.'s (2004) definition, the network is framed as a process of distributing (or dispensing) information through a computer connectivity perspective. Hence, networked learning becomes a method of transmitting information to learners.

To further complicate the terminology debate, distributed learning is currently being represented from two disparate perspectives. Firstly, there is the model of distributed learning environments (Oblinger & Maruyama 1996) that proposes the dis-intermediation of content and the focus on access, cost reduction, and flexibility for the learners. In effect, the transition of the term distance learning into a more technology driven transmission style of learning model was popular at the time of the study in many higher education institutions.

In contrast is the distributed learning community (DLC), as proposed by Wilson & Ryder (1998), where learners are encouraged to self-organise and the functions and control of learning are de-centralised and distributed among participants. Characteristics of the DLC include: distributed control; generation and sharing of new knowledge; flexible and negotiated learning activities; autonomous members; high levels of dialogue, interaction, and collaboration; and shared goals, problems or projects.

Additional characteristics that could be expected to develop over time include: capacity to adapt and evolve; creativity and innovation; crossing of traditional disciplinary and conceptual boundaries; appreciation of diversity, multiple perspectives and epistemic issues; and members who are responsible for their learning needs. Viewed from a negative perspective, there could be characteristics that result in short-term inefficiencies; lack of central control; and lack of predictability.

The second definition of distributed learning was further expanded by Downes (2005) when he described the learning environment as having no particular place where the learning exists, but many places where it can manifest, where learning is embedded in the act of communicating. Consequently, each weblog forms part of a network, but cannot be viewed as a miniature version of the whole.

Accordingly, distributed learning refers not to the type of learning (the end product) but to the method of communicating and sharing of the learning topic or how the learning is circulated. This is the process of distributed learning that has been facilitated by the internet and in particular by the self-organising, self-publishing, discursive nature of weblogs.

Subsequently, DLNs, as proposed in this research study, refers to the type of network that is established by the learners and can be characterised in part by the Distributed Learning Community of Wilson and Ryder (1998) and distributed learning process described by Downes (2005). The learning does not reside in the transmission – acquisition model of networked computers; instead, the learning in a distributed learning network belongs to the collective, shared understandings and development of learning through the network as a whole – not the individual. The networks are social, connected by shared or distributed knowledge, and based on the individual's personalised learning needs.

2.2.4 How do social networks, online communities, and DLNs differ?

Online communities were not a new phenomenon at the time of this study, having been used with various technologies since the early 1990s (Rheingold 1993). During the 1990s, the availability of technologies to connect and share had been utilised, albeit in

rudimentary forms such as email lists and bulletin boards. However, with the emergence of social software the ability to create and maintain communities became simpler and increased access to the internet profoundly broadened the scope and popularity of online communities.

The definition of an online community remains somewhat contentious (Preece & Maloney-Krichmar 2005). A general classification suggests a set of characteristics, such as shared interests; extension of physical community; boundedness, that is a relationship between relevant contexts, such as a learning community in an educational setting (Harris & Muirhead 2004). In some contexts, the online community is also bounded by the online site, or a place online where the community exists, for example the LMS can be referred to in this manner (Palloff & Pratt 1999).

Wenger's (1998) communities of practice (CoP) are frequently associated with online learning communities, in particular professional development or project related learning groups adopt the CoP. The core elements that distinguish a CoP include mutual engagement, joint enterprise, and a shared repertoire (Wenger 1998). Although many of Wenger's (1998) principles for engaging with others in a CoP and theoretical perspectives of situated learning (Lave & Wenger 1991), in particular legitimate peripheral participation, have been influential in the development of the pedagogical framework used in this study (see Chapter Three, Section 3.2.1.3), the DLN does not share the bounded elements of a CoP.

Membership in an online community is not always voluntary, for example a subject-related community may require participation as part of assessment. In addition, membership criteria can restrict access to community participation, or a walled-garden approach, as experienced with institutional LMS and subject-related discussion forums. In contrast, the DLN approach taken in this study had no access restrictions and participation in a network was controlled by the learners' engagement with others based on their personal selection.

In contrast to online communities, at the time of this study, publicly available social networking sites, such as Facebook, did not exist. Only MySpace, predominantly used by teenagers, was starting to become a popular online phenomenon.

Although social network concepts existed prior to the inception of technology platforms (Rheingold 2002), the introduction of these principles into the public technology domain was just being explored (Barabasi 2003, Watts 1999, 2004). Chapter Three, Section 3.2.2 will examine these theoretical perspectives further and locate the influence on the development of DLNs using weblogs in this study.

The online social network site is somewhat more straightforward to recognise as it typically comprises a number of core features: a bounded system; a public (or semi-public) personal profile; a list of other users; and a list of connections to users within the system (boyd & Ellison 2007). The emphasis of these social networking sites is on the organising of connections, with the personal profile as the key to generating further connections.

The sharing of experiences has been noted to attract homogeneous groups, or as the site grows, sub-groups will segregate by commonality (boyd & Ellison 2007). This can be diverse and educators have been amongst some of the early adopters, forming CoP-like sub-groups on many of the popular social networking sites (Ellison, Steinfield & Lampe 2007).

The essential principle of an online social network, making connections with others, was not familiar to the students in this study; only a couple had MySpace sites. Consequently, to develop a DLN there was a need to provide a conceptual scaffolding to enable the students to understand the possibilities and how to go about creating and engaging with a network. See Chapter Three, Part 2 for a description of learning activities within the 5SPF and how participants were provided with guidance to develop networks. Figure 4.1 illustrates how networks were described.

In current educational settings, it could be expected that social network concepts have become associated with specific platforms, such as Facebook, rather than the concept of using technologies to connect and share with others. While all social software applications have the capability to create a network of connections, the need to provide guidance in the manner conducted in this study may still be required. Mason and Rennie (2008) further explain the primary focus of a social learning networking as participation and user-generated content-focused, where activities encourage collective contributions, not individual ownership, emphasising the learning process as more important than the

collection of content. In many ways, the collective approach of a social learning network described by Mason and Rennie (2008) is more representative of a CoP than the DLN approach used in this study.

The individual, or personalised approach, as highlighted in the Horizon report (New Media Consortium 2006) mentioned in Section 2.2 of this chapter, predicted the move towards personalised learning environments (PLEs), away from the centralised LMS, which had been identified as an essential ingredient of lifelong learning where the learner could collect and organise information and artefacts from different contexts and situations, and demonstrate and reflect upon skills and achievements (Attwell 2007). ePortfolios, a form of personalised learning social software with similar attributes to the PLE, have been introduced across Europe, with Europortfolio, the European Consortium for the Digital Portfolio, stating in their mission that every European citizen would have an ePortfolio by 2010 (Ravet 2007). A review of Europortfolio's website in 2010 (Ravet 2010) indicated the mission as stated in 2007, with an acknowledgement that some countries and regions had provided ePortfolios to all citizens, while others are still considering it, and some have yet to investigate the opportunities. Recently updated to represent a new project, the shift is to establish a European network of ePortfolio experts and practitioners across all levels of educational institutions.

The approaches of the ePortfolio and PLE proponents align closely with the approaches that underpin the networked learning and application of the DLNs in the context of this study. In some instances, the weblog has been the foundational software in both ePortfolios and PLEs. What differentiates both these initiatives from the DLN is predominantly the orientation of ownership and locus of control. The DLN requires the learner to maintain an external horizon, or perspective, that openly has them collaborate and share their learning with others through meaningful interactions with the intention of further enhancing their own learning experiences. On the other hand, the ePortfolio, frequently a software application owned by a third party or institution, is based on a collection of resources and activities to demonstrate the achievement of the individual. Alternatively, the PLE focuses on the concept of the individual selecting and maintaining the most appropriate technologies to collect resources and store their individual contributions. Both the ePortfolio and the PLE reinforce an individual perspective of achievement, without incorporating the collaborative potential of learning with social software in a networked approach.

This section has outlined some of the key elements that differentiate the web-based learning environments and highlighted the approach taken in this study using weblogs to create DLNs. The next section will further examine the use of weblogs through a review of published papers and other studies at the time this research was conducted.

2.3 Other studies of weblogs

At the time of the study, there were reports and case studies of individual educators and several institutions in the early stages of incorporating weblogs into pedagogical strategies (Farmer & Bartlett-Bragg 2005). As a consequence, a field of practice had developed where an emerging network of educators, researchers, academics, lecturers, teachers, and their students from multi-disciplinary fields, exchanged their thoughts, practices and issues focused within the context of using weblogs in education, which became categorised as 'edublogs' where writers and authors were known as 'edubloggers'.

This section will trace the early weblog initiatives and published papers, including research studies at doctoral level and peer-reviewed articles. It is not intended to be an exhaustive coverage of weblog literature; rather the emphasis will be placed upon the papers that had an impact on this study and my participation in the early social software research community.

The dominant period of influence on this study was between 2003 and 2005 when weblogs were the primary social software application and excitement surrounding the affordances of self-publishing had many educational technologists buzzing. More recent papers up to 2009 will be included in this section for their perspectives and the value they add to the analysis and discussion of findings (see Chapter Five). Contemporary papers, although substantially fewer in number, will be included in Chapter Six where this study will be contrasted against current practices.

Additionally, this section will draw parallels with the DoI theory, outlined in Section 2.1 to examine if the state of adoption can be inferred by the nature and topics of the published papers.

In 2003, the inaugural BlogTalk conference in Vienna, notably one of the first multi-disciplinary social software-specific conferences, included many of the current thought leaders that were exploring the transformative nature of weblog software and the implications for education, their broader use in society, and academic inquiry. Oliver Wrede (2003) presented one of the seminal papers at the conference that influenced my practice. He advocated the inherent use of discourse through weblogs to improve teaching and learning through process-oriented rather than result-oriented use of asynchronous discussion forums.

The collaborative nature of weblogs was initially compared with existing web-based tools, such as asynchronous discussion forums (Bergner 2004; Godwin-Jones 2003; Gurteen 2003), with pedagogical practices transferring these existing practices into new environments. Other papers had investigated the potential use of weblogs and the communicative, discursive nature and the types of behaviours exhibited by bloggers, such as self-disclosure and anonymity, gender differences and motives for blogging, but not necessarily restricted to educational settings (de Moor & Efimova 2004; Gumbrecht 2004; Miura & Yamashita 2007; Nardi, Schiano & Gumbrecht 2004; Oriheula 2003; Qian & Scott 2007; Pedersen & Macafee 2007).

The personal ownership of the weblog (as discussed above in Section 2.2.1), transferring the locus of control to the learner, gained early interest where personal knowledge publishing and knowledge management were explored in the context of organising and personalising learning (Efimova & de Moor 2005; Efimova & Fiedler 2004; Gurteen 2003; Paquet 2003b).

Developing distributed learning communities with weblogs (Dede 2004; Loving et al. 2007) were arguably referring to networks of weblogs (as discussed in Section 2.2.3 in this chapter), where others were specifically investigating the building of learning networks through weblogs (Arsenault & Morse 2004; Efimova & Fiedler 2004).

Discussion of weblogs for academic writing, as a professional publishing and research tool, was prevalent (Mortensen & Walker 2002; Glenn 2003; Paquet 2003b; Efimova 2004). Mejias (2006) explored the use of weblogs as the literature review for his dissertation by demonstrating the process through the review and hyperlinking of weblog posts over a period of three years.

A significant number of published works reviewed the technological features of social software and associated these with the potential opportunities to include in teaching and learning contexts (Ferdig & Trammell 2004; Glogoff 2005; Gurteen 2003; Nichani 2004; Richardson 2005, 2006; Williams & Jacobs 2004), while others focused on what can go wrong, in an almost anti-weblog cautionary tale style (Andergassen et al. 2009; Krause 2004; Reynard 2008).

Other papers reported small-scale case studies, typically of a single subject and a single student cohort (Anastasi & Cochrane 2006; Chong 2008; Farmer, Yue & Brooks 2008; Pullich 2005; Weller, Pegler & Mason 2005).

To further advance the discourse on the use of weblogs in education in the Australian region, together with colleagues concerned with the adoption of weblogs in education, James Farmer, Adrian Miles, Liam Morgan and I convened the inaugural weblog conference in Australia, BlogTalk Downunder, in May 2005, where over one hundred delegates attended from Australia, New Zealand, South-East Asia and Europe. It is useful to consider the categories of papers presented at this conference to provide a snapshot of practice in this region at the time against the DoI adoption stages to illustrate the level of progress towards diffusion.

Thirty papers were accepted for presentation over the two-day conference, represented by the following groupings of topics:

- Weblog technology included associated features and developments (Chaczko 2005), network mapping and analysis (Ackland 2005).

- Modes of communication included style of narratives, mobile and video blogging (Cavanagh 2005; Chesher 2005; Farmer 2005; Goggin 2005; Hoh 2005; Miles 2005; O'Neil 2005; Thomas 2005; Weight 2005).

- Use of weblogs in the Australian political landscape, including a paper from former Australian Federal Senator Andrew Bartlett (Bartlett 2005; Cook 2005; Fuller 2005).

- Teaching and learning strategies, including assessment (Cooper & Boddington 2005), language learning (Tan 2005), open, personalised learning environments

(Fiedler 2005; Sade 2005), pedagogy and practice (O'Donnell 2005; Wise 2005), and reflective writing (MacColl et al. 2005).

Based on an analysis of the content of these papers and on extended conversations in the conference environment, the majority of presenters were practising at the implementation (stage four) or confirmation (stage five) in the DoI adoption stages. In contrast, the attendees were predominantly in the persuasion (stage two) or decision (stage three) stages of adoption, keen to gather further information and learn from others' experiences. Although this could be viewed as a small-scale analysis of the state of adoption in the Australian region, it could be extrapolated to represent the level of diffusion at a low level, in some departments of some institutions, but not indicating widespread practice.

The BlogTalk conference series achieved its objectives and was concluded in 2010, based on the decision that social software had evolved beyond weblogs as the primary platform and expanded into the higher profile social media and social networks that have become dominated by their adoption by consumer brands for marketing purposes. However, as a group of early adopters, we acknowledged our role in sharing the potential for others (as demonstrated in the BlogTalk Downunder conference, 2005 described above) but agreed that we were unable to further progress or influence adoption through the conference format. Our role now was to further demonstrate and proliferate practice with an intentional pragmatic approach, by providing guidance and support to others with less experience or in early stages of adoption.

A number of these conference papers are cited in this thesis, and ongoing academic exchanges have developed as a consequence. However, the majority of discourse has remained focused on software enhancements and appropriateness of applications for integration into teaching strategies.

A number of publications directly targeted the use of weblogs in educational contexts at the time of the study, for example:

- '7 Things you should know about…Blogs' published online by Educause Learning Initiative, 2005; and

- 'Teaching and Learning with blogs' published online by the Australian Flexible Learning Framework, 2004.

These publications focused on the technology and how to use it with examples of potential uses: reflective learning journals, collaborative writing, ePortfolios, gathering field notes, communities of practice, knowledge journals, teaching new literacies, language classes, professional practice journals, and research journals listed. Absent from these publications are the underpinning pedagogical strategies that attend to the needs of the learners to engage with the new technologies.

A study by Larsson and Hrastinski (2011) revealed the most prevalent topic in publications about weblogs from 2002 – 2008 related to the 'uses and users of weblogs'. This provides further substantiation that the stages of individual adoption ranged between the decision and implementation stages. Other topics, such as 'the effects of blogs and blogging' and 'how blogs and blogging practices could be improved' only became evident in 2007 and 2008 but even combined, represented less than a third of published articles.

Studies focusing on the learners' experiences of weblogs were scant during this period. Of note was Dickey's (2004) investigation into the impact on students' perceptions of isolation in distance education through the use of communal weblogs. The study grouped up to five students per weblog where they shared reflections and were encouraged to ask questions and post their assignments. The findings indicated a positive response from students regarding the use of weblogs to reduce isolation. However, of particular interest in the findings was that similar previously reported experiences using discussion forums in this manner had not resulted in the same positive outcomes. Dickey (2004) had no obvious explanation for the anomaly but recommended further research into understanding the differences in attitude to weblogs. As discussed above in Section 2.2.2 in this chapter, the dynamics of ownership and locus of control were considered significant points of difference by this study and a possible explanation for the experiences noted by Dickey (2004).

As indicated in this section, very few of these cited studies had investigated the learners' experiences and the underlying pedagogical approach to self-publishing. The focus was exploring the disruptive, communicative nature of weblogs, the possibilities

afforded through the democratisation of the web through the act of self-publishing, and the technical perspectives which were undergoing rapid advances during this time.

2.4 Conclusion

In the context of this study, the rapid change in social software (see Figure 1.1 in Chapter One) appears to have had the effect of creating interest in new learning environments, demonstrated by the number of studies exploring opportunities. However, as the overview of weblogs in adult education settings has demonstrated, widespread adoption remains modest, with pockets of innovation in practice, and limited theoretical reflection and development of pedagogical frameworks jeopardising the sustainability of technology initiatives.

The significant contributions from this study support the argument, as seen in Europe, to drop the 'e' from eLearning and validate new initiatives that elegantly embed the technology aspects of learning into the overall approach. We are doing a disservice to the potential afforded by social software through the approach that views technology as a tool to solve a problem, rather than viewing the technology as an innovative approach to new learning infrastructures (Richter & Reimer 2013).

Through the investigation into understanding the learners' experiences we will be able to leverage this information to inform pedagogical approaches that enable the effective introduction and sustainable practices of self-publishing technologies and creation of DLNs.

Chapter Three will examine the development of thinking, underpinned by my role as a critical observer and practitioner in the context of my practice as an educator, which resulted in the development of the pedagogical framework (5SPF) that has formed the foundation for the research design of this study. The theoretical perspectives and pedagogical models that influenced these processes will be related to the 5SPF and an overview of the stages in the framework will be explained.

Chapter Three

Development of the 5-Stage Pedagogical Framework: Presenting the Teaching and Learning Context for the Research Design

3.0 Introduction

Chapter One outlined the research rationale and contextual background which was extended in Chapter Two through a deeper examination of the use of weblogs in the adult learning education landscape at the time this study was conducted.

In a traditional thesis, this chapter would normally present a literature review that would trace the development of thinking and theoretical influences on the design of the project. In this thesis, however, the development of thinking has also been shaped by my role as a critical observer in the context of practice over a period of four years prior to the commencement of the research where I was engaged in a process of critical reflection on the potential of social software for adult education. This process involved me not only in reading and thinking, but also in presenting papers at international conferences and writing peer-reviewed journal articles and book chapters. The final outcome of this was a pedagogical framework, the 5SPF, and it was the implementation of this within three undergraduate subjects and a vocational education qualification that formed the keystone of the research design for the project that forms the basis of this thesis.

The engagement with literature and interaction with colleagues through peer-reviewed articles, conversations with other experts in the field, and with learners required an open-minded, critical thinking approach to these inputs. As will be made clear in this chapter, input from colleagues and interaction around key concepts has been an ongoing element in the research design.

The objective of this chapter is therefore to trace this process and locate this study within the theoretical landscape. The chapter has been divided into two parts: Part 1 traces the theoretical and pedagogical influences on the research design, while Part 2

presents the 5SPF and describes the stages in the framework that will be essential for situating the findings in Chapter Five.

In Part 1, Section 3.1, to further position the overarching pedagogical approach, a brief retrospective of the preliminary versions of pedagogical frameworks deployed for introducing weblogs into teaching and learning will contribute background insights that shaped the theoretical perspectives and objective for this inquiry.

Continuing in Part 1, Section 3.2 reviews the theoretical perspectives that were a significant influence on the pedagogical approach adopted. These perspectives will be associated with both their influence on informing reflective practice, but also how principles were applied to the design of future learning activities incorporated in the 5SPF used in this study. Following the theoretical perspectives, in Section 3.3 existing pedagogical models that specifically informed my online teaching practices are examined, with highlighted aspects where there appeared a gap in the models to address the self-publishing approach being used with weblogs and similar social software.

The framework was developed over the years 2000 – 2005. The literature that informed this development was sourced during this period and is reflected in this chapter. Chapter Six traces further development of the literature to situate the study in the contemporary context.

Part 2 of the chapter details the design of the 5SPF used in this research project by outlining each stage, highlighting the objectives, the pedagogical strategies, and the specific activities associated with each stage. Additionally, each stage will distinguish where the different theoretical perspectives and other pedagogical frameworks have been influential. This amount of detail is necessary because of the key role played by the framework in developing the context for this research. It is important, on this basis, to understand the structure of 5SPF and its relationship to the data collection and analysis.

The relationship between the 5SPF and the data collection and analysis is explained in detail in Chapter Four where the phenomenographic methodology is outlined and the framework's role in data collection is identified. In Chapter Five, Part 1, the first iteration of data analysis will be reported to correspond with the stages in the framework to understand how the learners went about the learning activities and

developing their networks. The detailed presentation of both the framework and first iteration of data analysis will provide the basis for the further analysis of the learners' experience of self-publishing and informs the emerging themes reported in the phenomenographic categories of description and outcome space. See Chapter Four for the design and methodology of this study and Chapter Five for the findings and discussion.

Part 1: Theoretical and pedagogical influences

The potential of social software and associated self-publishing actions in adult learning settings was, overall, at the time of the study, unrealised, with only a small number of publications acknowledging the potential of creating new approaches to learning and knowledge building with diverse, unlimited connections across networks of learners and consequently requiring renewed approaches to pedagogy (Downes 2004; Siemens 2005). Contemporary theories of eLearning published during the early versions of the pedagogical frameworks outlined in Section 3.1.1 and at the time of the research study were limited to approaches for instructional design and as delivery mechanisms of content, or multi-media design (Hall 1997; Mayer 2001; Mayer & Clark 2002). Traditional educational practices were still focusing on knowledge transmission and acquisition (Scardamalia & Bereiter 2006), with the internet and email viewed as tools for distributing, administering, and broadcasting, not building knowledge or enabling new ways of approaching learning tasks.

Inevitably, the economic and administrative drivers for eLearning at the time, as outlined in Chapter Two, Section 2.1.1, produced published instructional design frameworks that are still popular in 2013 (Merrill 2002; Horton & Horton 2003; Carliner 2002; Clark & Mayer 2003) and studies that focused on the learning environment as constrained within the parameters of an online course or product, or within the confines of an institutions' LMS platform, or a subject (Boettcher 2003; Salmon 2000). Conceiving of the learning environment in a broader networked context, where the learners were publicly publishing to the internet and connecting with others, was not addressed to any extent until Downes (2007a, 2007b, 2010a, 2010b) published more widely on learning networks (see Chapter Two, Section 2.2.3), while the earlier

published works on social learning (see Section 3.2.1) by Bandura (1977b), Vygotsky (1978) and Lave and Wenger (1991) had acknowledged the learning environment as the context or situation where learning was taking place, not the mechanism of delivery.

The dynamics of social networking with social software was increasing in awareness, with network science coming of age through publications such as Barabasi's (2003) 'Linked'; see Section 3.2.2 for further discussion on the literature of social networks and the application to learning.

As asserted in Chapter Two, pedagogical practice in higher education was, and arguably remains, reflected in ad hoc applications of emerging social software and self-publishing technologies, while learning theorists struggled to keep pace in the dynamic, rapidly changing context of publicly available software and institutionally constrained platforms (Castells 2009; Wertsch 2003). Concurrently, pedagogy is represented in published works by stating the case for change and imagining future states for practice but predominantly lacking actionable frameworks. The learners, meanwhile, have become more technology savvy and are experiencing a disconnect between their personal use and educational application of social software, with little guidance as to how to effectively transpose their social networking activities into powerful learning and ongoing professional development tools (Bartlett-Bragg 2009, 2012; Shuck, Aubusson & Kearney 2010).

These issues will be examined in Part 1 of the chapter by reviewing the influences on the development of the 5SPF, including the preliminary versions of the framework, outlined in Section 3.1, that precedes the key theoretical and pedagogical influences discussed in Sections 3.2 and 3.3 of the final version of the framework used in this study, detailed in Part 2 of this chapter.

3.1 Background to the pedagogical approach

As previously mentioned in Chapters One and Two, my early interest in social software stemmed from a dissatisfaction with eLearning approaches that lacked pedagogical design and engagement with learners. The arrival of social software offered the

potential to address these issues, and as such I took an active approach to further explore the learning opportunities.

From as early as 2000, weblogs were part of the design in all subjects that I authored and/or lectured in undergraduate courses and vocational qualifications. Although the software was very basic in contrast to the sophisticated weblog and associated self-publishing platforms available today, the ease of use made the weblog a standard inclusion in my pedagogical strategy for using and experiencing the potential for alternative eLearning technologies.

The status of eLearning uptake at this time (2000 – 2005) was outlined in Chapter Two, Section 2.1.2, while the approval of business case proposals for LMS implementations were occurring in preparation for the increased operational demands. These technology investments were based on the premise of lowering the costs of training delivery, reduced resources required to administer courses, and promises of increased productivity. However, strategic directions had failed to acknowledge the need for investment in the professional development of staff responsible for designing, developing, delivering and supporting learners (Bartlett-Bragg 2003c, 2005).

One of the challenges for tertiary institutions at this time, which continues through to contemporary settings (Dua 2013), was how to address the demands for incorporating new technologies to deliver espoused efficiencies, while remaining strategically relevant, competitive, and innovative in a rapidly evolving marketplace. In addition, the challenge created a dual-pronged point of contention, namely the up-skilling and professional development of faculty staff, together with the teaching of digital skills to students to enable their effective use of new technologies, while not compromising the quality of subject content that was required within the course outline (Bartlett-Bragg 2003c).

At the time, detractors of eLearning claimed learners were discouraged from reflecting upon their learning and were unable to contextualise concepts being presented in an online manner (Bartlett-Bragg 2003a, 2008a). These claims appear to have been based upon the dominance of technology implementations that were devoid of or had limited use of collaborative features and were not informed by pedagogical strategies. The focus on the potential of reduced costs, productivity and administrative gains saw

organisations commit to large resource libraries of content and educational institutions providing digital access to course materials, often reinforcing a surface learning approach (see Section 3.2.3 for literature review and theoretical application of surface and deep learning) and promoting the view of learning as a product that can be acquired, anywhere, anytime.

Taking into account these criticisms and being cognisant of the unrealised potential with self-publishing tools, the initial pedagogical intention of using weblogs within subjects was to demonstrate their use as an alternative method for learning journals that created a structure for enhancing technology-mediated reflection (Bartlett-Bragg 2003b). However, as described below in Section 3.1.1, the learners were using their weblogs for more than reflective writing. The observed behaviours of the learners indicated actions that extended their individual learning journal approach into a more socially oriented network of learners. They were reading each other's weblog posts and leaving comments, while additionally referencing these posts in their paper-based essays. Together with the extended engagement of collaboratively writing and reflecting online, the style of their written work demonstrated deeper levels of learning and critical thinking (see Section 3.2.3) by stating and questioning their assumptions, while comparing their perspectives to their classmates.

As indicated in the introduction of this chapter, development of the early versions of the 5SPF, outlined below in Section 3.1.1, were informed by critical observations of learner behaviours and feedback from students, and reported by the stages people experienced as they used weblogs in their learning environments. To ensure the validity of each version of the framework, observations were based on a new group of learners, across more than one subject or class cohort, including the final version used in this research project.

From my experience with eLearning, the behaviours being observed were different to how learners had previously engaged with writing tasks on asynchronous discussion forums in the LMS, as mentioned above in Chapter Two, Section 2.2.2. These observations led to a deeper inquiry into understanding the process of publicly publishing on weblogs that signalled the potential to shift the attention of the learner to the communication dimension of critical thinking and collaborative reflection (Boud, Keogh & Walker 1985; Brookfield 1987). The process in itself was indicating interplay

with the self and others, leading to levels of metacognition that had not previously been apparent in subject-related tasks through other eLearning technology. Descriptions of learning activities will be highlighted in Section 3.1.1 below, tracing the development of the pedagogical approach and how the design of this project was informed by my role as a critical practitioner.

3.1.1 Preliminary development of the 5-Stage pedagogical framework

In 2003, I presented and published an early version of a framework for introducing weblogs into educational settings at the 4th International Conference on Human-System Learning: 'e-Learning: A Virtual Promise?' held at the Glasgow Caledonia University. A graphical representation is displayed in Figure 3.1 below, followed by an overview of the stages captured in observational notes made after lecture sessions and critically reflected upon with a review of literature for the production of the conference paper (Bartlett-Bragg 2003b).

As previously highlighted in Chapter One, Section 1.21, Salmon's (2000) CMC model (see Section 3.3.1 in this chapter) was a significant influence on development of a pedagogical approach for the introduction of weblogs. The grouping of stages representing learner behaviour was based on classroom and online observations, which had initially indicated a similarity to behaviours described by Salmon's (2000) model. However, differences were noted after the early stages of set-up. In part, the point of difference was expected to relate to both the different type of software and the nature of learning activities focused on the use of a learning journal.

The stages and the learners' behaviours are described below. Additionally, the feedback from expert practitioners and peer review are summarised and will highlight how this was used to inform further pedagogical framework enhancements.
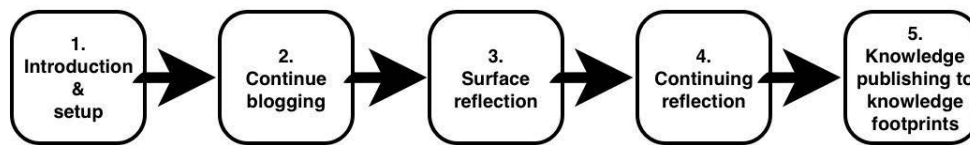
Figure 3.1: 5-stage blogging process – July 2003

Stage 1 – Introduction and set-up

The first stage of this early version was focused on the set-up and initial process of publishing using a weblog, which was heavily influenced by the experience of introducing asynchronous discussion boards and LMS features within existing subjects and additionally by the application of Salmon's (2000) CMC model; see Section 3.3.1 in this chapter for further analysis and areas of influence.

Students were encouraged to investigate and report on different uses of weblogs, while being provided structured questions as a guide for their writing. Primarily, the focus was on reflection after a learning event, while paying attention to their reactions and feelings (Boud, Keogh & Walker 1985; Walker 1985).

Students were encouraged to share their weblog URLs with their class cohort on the subject's LMS discussion board, although few took this step during this early phase. There was resistance to publishing personal learning experiences in a public format and most posts were brief factual reports.

Challenges setting up the software dominated their experiences and writing with minimal effort was displayed on their weblogs.

Stage 2 – Continue blogging

At this stage, the main objective was to keep students using their weblogs and continuing to focus on writing and publicly publishing. Time was allocated at the beginning of scheduled classroom sessions to support those who were still experiencing difficulty with the software set-up.

As the publishing process became less about the technology, the writing of posts became more frequent and a marked difference in the style of writing being used on their weblogs in comparison with paper-based learning journals was noted. The published posts displayed more clarity of thought, with some inhibition on the expression of opinions or feelings. Some students discussed their need to consider more carefully the composition of posts versus stream of consciousness that represented their style of writing in paper-based journals.

Stage 3 – Surface reflection

This stage was labelled 'surface reflection' to represent the nature of the students' reflective writing. A surface approach to reflection tended to focus on completing a task with little effort to examine assumptions or explore connection to other experiences or knowledge.

Although the use of weblogs was not compulsory for these classes, it was noted that many students started to arrive early for class and immediately commenced their weblog activities. In addition, most were posting to their weblogs more than once during the week, outside of classroom sessions.

Students were encouraged to explore a deeper reflective process that prompted them to anticipate future learning, based on their current experiences. Most students resisted this type of deeper level of reflection, which was expressed openly in the posts on their weblogs. Others, however, were starting to develop a questioning technique style of writing that displayed considerable thought and preparation for a short paragraph style post.

Stage 4 – Continuing reflection

At this stage, no classroom time was allocated for specifically working on their weblogs; however, discussions about topics and issues that could be incorporated into their posts were highlighted. This was partially to understand whether the blogging process would evolve as a self-directed activity or whether it would become an abandoned writing space.

As might have been anticipated, some students stopped contributing to their weblogs, having not fully mastered the technology or not being able to fully grasp the concept of reflective writing in this novel genre, that is, publicly publishing to the internet.

Students that did continue acquired a voice, or writing style, that demonstrated deeper reflective actions, for example, commenting on a topic that had been introduced earlier in the subject and hyperlinking to their earlier posts, including additional thoughts as to how their knowledge may have changed over time. Additionally, some students used quotes from their weblogs in their paper-based essay assessment tasks and reported enthusiastically about being able to list themselves as author of a published work on their List of References, with an official URL.

Stage 5 – From knowledge publishing to knowledge footprints

Stage 5 was a new addition, as prior to 2003 these behaviours had been included in Stage 4. Based on critical conversations with other experts in the field, an additional stage was considered valuable, to enable a shift in pedagogical approach that recognised the behaviours the learners were exhibiting.

At this stage, students had started to read each other's weblogs and were leaving comments. There was an intentional action evident that indicated they were leaving their opinions and experiences for others on the internet to read, not just their classmates.

Discussions with students confirmed this action was initiated by their own volition, as they actively sought to create a conversation with others beyond the confines of their class and the University LMS. The students had become aware of the reach of their weblogs and were writing opinionated posts that displayed critical thinking and reflected qualities of deeper learning, together with autonomous learning practices.

Issues and considerations for future versions of the framework

Feedback from peer review and conversations with experts, such as Salmon (2000), at the aforementioned conference informed further development of the framework.

- The technical challenges experienced in Stage 1 and 2 would require additional pedagogical focus and support activities in the next iteration.

- A review of reflective and metacognitive processes, including the use of writing, as a tool to assist in achievement would be further enhanced by additional literature review. Adjusted learning activities would be included in Stages 2 and 3.

- The emerging behaviours noted at Stages 4 and 5 indicated areas for further review of literature and consideration on how to best support the development of connections leading to personalised networks.

The next version, based on the feedback and further critical observation and literature review insights from another semester of application, was published in the peer reviewed Knowledge Tree journal in October 2003 (Bartlett-Bragg 2003a). The basic weblogging framework had evolved from reporting on observations of the learning process to include pedagogical strategies underpinned by theoretical perspectives and expert input from colleagues. The updated graphical representation is displayed in Figure 3.2 below, accompanied by descriptions that indicate the change in focus towards a shifted perspective of the pedagogical approach required.
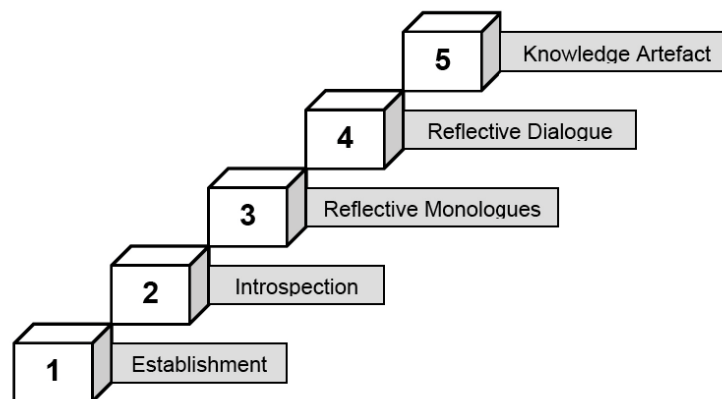
Figure 3.2: The 5-stage blogging process October 2003

Stage 1 – Establishment

The purpose of the first stage remained unchanged from previous versions; however, additional effort was focused upon ensuring successful set-up of their weblogs, encouragement to create posts, and in particular, more emphasis on sharing their weblog URLs with their classmates.

Stage 2 – Introspection

A change to the name of this stage from simply 'Continue blogging' to 'Introspection' signified the shift in focus to facilitate conscious awareness of the reflective process in writing tasks.

However, even with the emphasised focus on reflection, the students were still using a short paragraph style of writing, reporting on facts but also keen to express, publicly, negative emotions and annoyance with software challenges.

Stage 3 – Reflective Monologues

This stage was renamed to represent the shift in writing style, where students were starting to exhibit short, personal reflections on learning tasks. The use of monologue in the title represented the intended reader of these posts, which at this stage of the framework was not demonstrating an intention to engage with readers other than themselves.

Some students continued to display resistance towards reflective writing and maintained a surface learning approach that simply summarised learning events or readings in the style of an annotated bibliography.

Stage 4 – Reflective Dialogues

The Stage 4 title was amended to represent the shift from writing for themselves to the awareness and intentional writing to engage with external readers – whether that was within their subject cohort, the wider University, or beyond the parameters of the institution.

Students who progressed to this level began exhibiting self-directed learning strategies as they explored alternative ways to engage with readers. They were extending their reading and reviewing topics of interest that related to the subject content, but were not required activities. These additional items were posted to their weblogs and intentionally shared through weblog features such as trackbacks or comments.

A point of interest at this stage was the flow-on effect to others who had disengaged with the non-compulsory writing activities and who became regular readers and commenters on other student weblogs. Deeper levels of learning and reflection were

noted as both writers and readers participated in a form of dialogue using the comment features on weblog posts, not previously witnessed in the earlier versions of the framework.

Stage 5 – Knowledge Artefacts

Again, the title of this stage was amended to represent how emergent writing behaviour in the learners became an intentional post or contribution designed to engage with their readers, either immediately or over a longer timeframe, and to enhance their own experience of learning, creating posts that were knowledge artefacts.

The students had become fully aware of the extended reach their weblogs provided and were also building a list of external bloggers that they read and commented upon regularly. As this had become a naturally occurring activity, it led to further considerations that investigated assisting the students to build a personal learning network or DLN in future versions and applications of the framework.

Issues for consideration for the next version of the framework

- Social learning theory (Bandura 1977b; Vygotsky 1978) had emerged as a dominant theoretical perspective underpinning the pedagogical framework and was more influential than the reflective and metacognitive aspects of self-publishing that had not been apparent in the earlier versions.

- The influence of the role of the educator was a consideration that emerged from increased awareness of social learning theories.

- The dynamic of online communities, again incorporating the social learning theories.

- The decision to incorporate the self-publishing process into the subject as a mandatory and assessable activity required a review of assessment strategies.

As the framework developed, it became apparent that the application would be able to address the dual-pronged issue of faculty skills and learners' technical proficiencies. By providing a pedagogical framework for educators to follow, the process also enabled their personal professional development and additionally addressed a framework of

pathways for the learners to experience the technology, without impeding the learning related to subject content.

The final version of the pedagogical framework, the 5SPF, as used in this research project, incorporated the feedback from peer-reviewed articles, conversations with experts and conference presentations (Bartlett-Bragg 2003a, 2003b, 2003c) and the students themselves, outlined in detail in Part 2 of this chapter.

The concerns and issues identified at the end of each version were addressed and reviewed against current literature and studies; theoretical perspectives; and pedagogical frameworks to determine appropriate strategies or interventions that could be added to appropriately manage and reduce significance, consequently affording the learners the opportunity to fully experience the use of self-publishing technologies to develop their DLNs. In addition, identifying and minimising the frustrations and inhibitors for the learners, in particular with their technical challenges, ensured all learners were provided with sufficient support and guidance, regardless of their level of capability at the commencement of the framework. The key influences from the literature reviews during the development of different versions of the pedagogical framework are described in the next section and their application to the 5SPF used in this study will be highlighted.

3.2 Related theoretical perspectives

This section will highlight the aspects of theoretical perspectives that were reviewed and applied to the development of the final version of the pedagogical framework, the 5SPF, which was used in this study as the key element of the design that enabled the research questions to be addressed.

Theoretical perspectives that underpinned the subsequent development and final version of the 5SPF included Bandura's (1977b) social learning theory, in particular the use of observational and symbolic modelling together with development of self-efficacy (Section 3.2.1.1); Vygotsky's (1978) theories on the development of knowledge construction through the discursive nature of weblogs, expanded to incorporate learning that is socially constructed through language and collaboration (Section 3.2.1.2); Lave and Wenger's (1991) situated learning theory that conceptualises learning not as a

separate and independent activity but as participation in a community of practice (Section 3.2.1.3); Boud's (2001) and Schön's (1987) models of reflective writing processes (Section 3.2.3); Brookfield's (1987) critical thinking process (Section 3.2.3); Marton and Booth's (1997) anatomy of awareness including surface and deep approaches to learning, with critical differences in approaches identifying aspects that inform pedagogical practice (Section 3.2.3); and theories of networks, including Barabasi's (2003) models of internet patterns of behaviour and the formation of network models that can be applied to describe patterns observed in weblog networks and Downes's (2004) early publications on learning networks (Section 3.2.2).

As highlighted above in the introduction to Part 1 of this chapter, the contemporary eLearning theories at the time of the study did not adequately provide insight into the social dimension of connecting, interacting and learning with others and the nature of learning that was observed during the introduction of weblogs into the researcher's subjects. A broader examination of learning theories was required to shape an understanding of the nature of the learners' experiences. Other researchers were also consulted with during conference sessions specifically investigating social software, such as BlogTalk (2003, 2004, 2005, 2006). This engagement with the social software community guided the literature review towards social learning theoretical perspectives.

3.2.1 Social learning

In the context of this study, the term social learning will be used to refer to the recognition that learning occurs in social settings through interactions with others and subsequent learning is influenced by observing and modelling the patterns of behaviour (Cornford, 1999). More recently, however, the term social learning has been adopted by popular vernacular to refer to learning that uses publicly available social media platforms (Bingham & Conner 2010; Bozarth 2010), such as Facebook, Twitter, YouTube and many others. This has created the misconception that social learning is a new phenomenon and driven by technology developments, as opposed to a long-standing category of learning theories that is grounded in the field of psychological research now being enabled in ways previously not imagined by the authors, i.e. through social software applications. This is not a definition of social learning validated

by this study as it limits and misconstrues the potential of social software to promote learning opportunities beyond more than the popular, current social network software.

The body of literature in social learning has been dominated and shaped by Bandura's social learning theory expressed as an observational model (1977b, 1986, 1997) which is essentially a holistic perspective reconciling a constructivist approach with elements of cognitive information processes, social, and behavioural psychological theories (Cornford, 1999). However, arguably, Vygotsky's work, written predominantly in the 1920s and 1930s in Russian and translated in the 1960s – 1970s, can be included as influential for the more current developments in social learning (Wertsch 1985). While Lave and Wenger's (1991) situated learning and Wenger's (1998) ongoing communities of practice works rely heavily on the context and social aspects of participation with others to achieve engagement, what they propose is the fundamental process of how we learn.

As outlined in the previous section, the early versions of the pedagogical framework identified aspects of emerging learner behaviour that had not been expected. These highlighted the potential for more emphasis on the networking aspects of weblogs and an extended use of self-publishing technologies as more than solely online learning journals, such as the development of DLNs.

While social learning was considered fundamental to this study, there was a growing level of interest in the dynamics of social software and evolving social network behaviours; however, this was underrepresented in educational research at the time of the study (see Section 3.2.2, Learning networks). In contrast, behaviourist and cognitive instructional design principles were the dominant influence on eLearning theories (Mayer 2001; Mayer & Clark 2002; Merill 2002). This perspective of learning online did not provide any conceptual position that could inform the development of social learning behaviours, or associated pedagogical strategies, being exhibited in the early versions of the 5SPF development.

Subsequently, the exponential growth of social media, including popular social networks such as Facebook and Twitter which did not exist at the time of the study, now justifies the need for theoretical perspectives of learning in social software contexts, such as Siemens (2005), and validates the early notions that self-publishing

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technologies would become an important development in online learning with a need for accompanying pedagogical frameworks. A discussion of current developments, both the convergence and divergence of thinking in this field, is reviewed in Chapter Six, Section 6.2.

In the following sections, the significant aspects of the social learning theories that informed the final version of the 5SPF development will be detailed.

3.2.1.1 Bandura's Social Learning Theory

Of the many cues that influence behaviour, at any point in time, none is more common than the actions of others.

(Bandura 1986, p. 206)

The emerging behaviours in the learners' use of weblogs noted during the early versions of the pedagogical framework (see Section 3.1) indicated their awareness of an extended audience reach that could be engaged with on relevant topics of their choice. Notably, this behaviour had not been directly taught as part of the subject, where the use of weblogs had been focused on reflective learning journals. To investigate the observed behaviour, but also to determine how to encourage and enable all learners to achieve this level of engagement, Bandura's (1977a, 1977b, 1986, 1997) work provided the insight that resulted in the underpinning assumptions that influenced the final version of the pedagogical framework that became the 5SPF. The fundamental basis for Bandura's (1977b) theory was the premise that learning occurs as either casual or directed observation of behaviour in everyday situations and where modelling could be used to demonstrate desired outcomes or behaviours. The core elements of Bandura's (1977b) work that informed the development of the pedagogical framework are described below and related to their application within the learning activities in the 5SPF.

Modelling

The early versions of the pedagogical framework for using weblogs had used modelling in the initial set-up stages to provide the learners with a basic level of scaffolding to shape the abstract concepts being presented. Examples of weblogs and how they could be used in different contexts presented the learners with the opportunity to modify the

concepts to develop their own style of self-publishing. However, the early iterations of the framework did not take into account that novice learners frequently fail to notice the relevant aspects of a given cue (Bandura 1977b). To refine the use of observational learning and modelling, guidance across all stages of the 5SPF was restructured to draw attention to the key aspects of development to achieve the objective of each stage.

Bandura (1977b) distinguished three types of models that provide the learner with the ability to observe, while adapting to and contextualising their specific situation:

- Direct modelling, that is, live/real people where the behaviour is observed and imitated;

- Symbolic modelling where behaviours are observed through characters, as in books and movies; and

- Synthesised modelling, a combination of above.

Symbolic modelling most directly correlated with the type of modelling used to support the concept of using weblogs, where the model was an artefact that belonged to the character, a real person, and the author of a weblog. In particular, how weblog authors presented themselves in their 'About Me' page was significant for learners as they created their online presence or self-representation and established a voice. This will be highlighted further in Chapter Five, Section 5.3.2.

Symbolic modelling additionally encouraged learners to contextualise, be creative and potentially improve upon what they had observed, while adapting what was observed to their specific situation, rather than imitating as experienced in direct modelling (Cornford 1999). The learning activities in the 5SPF (outlined in Part 2 of this chapter) required the learners to observe a selection of weblogs and adapt their own weblogs to include personalised aspects they found relevant to their situation and represent these either in their style of writing, the structure or the layout of their weblog, or their manner of engaging with readers.

Self-efficacy

The motivational processes of particular importance in Bandura's (1977a, 1977b, 1986, 1997) theory were the feedback loops received from the production processes and the

learners' levels of expectancy, or self-efficacy to be able to perform the tasks required to become critical components for the successful completion of tasks.

Self-efficacy will influence an individual's choice of behaviour, the quality of their effort and their persistence to continue with subsequent attempts at a task. It affects the judgement related to organising and implementing effective strategies to manage novel or stressful learning activities (Bandura 1977a, 1977b, 1986, 1997; Bandura & Jourden 1991; Zimmerman 2000; Zimmerman, Bandura & Martinez-Pons 1992). The notion of self-efficacy was especially influential for the learning activities designed in the 5SPF. The attributes of self-efficacy provided a framework for understanding many of the observed behaviours in students who had not achieved early technology set-up tasks and had not persisted once the use of weblogs was no longer required. In combination with the awareness of Vygotsky's (1978) zone of proximal development (see Section 3.2.1.2), tasks in each stage were designed into steps that were achievable, while providing ways to expand the knowledge and skills for students across all levels of capability.

The modification of learning activities in the 5SPF used in this study was designed to activate positive belief in their self-efficacy. This required the setting of tasks that appeared achievable to the learners with adequate support materials; provide sufficient time to complete the tasks; provide encouragement by example through symbolic modelling; and create a learning environment where the emphasis on peer group collaboration enabled further observational modelling and support. See Part 2 of this chapter for an overview of the learning activities at each stage in the 5SPF.

Theories of self-directed learning (Knowles 1975; Merriam & Caffarella 1999) correspond with Bandura's (1997a, 1997) self-efficacy and self-regulated learning behaviours (Bandura 1977a, 1977b, 1986, 1997; Bandura & Jourden 1991; Zimmerman 2000; Zimmerman, Bandura & Martinez-Pons 1992) that focus on fostering a learning environment where there is student control, matched to their readiness and comfort. Pedagogical approaches are noted to either encourage or inhibit self-directed learning (Merriam 2001), where dependency is reinforced through lectures, provision of learning materials and testing, while a self-directed learner engages with independent research, student-student interactions and self-assigned goals. A key element of the pedagogical

approach in the 5SPF was to foster a self-directed, learner-controlled environment through learning activities that reinforced positive self-efficacy.

Furthermore, the group dynamics of the subject cohorts additionally permitted their self-efficacy to incorporate aspects of social comparison theory (Bandura & Jourden 1991; Festinger 1954) where the learners evaluated their performance against other people. Social comparison theory argues that learning will be more effective if the models selected are matched to the various levels of learning, in a similar vein to Vygotsky's (1978) more knowledgeable others (MKOs); see Section 3.2.1.2. The 5SPF deployed a combination of these theoretical perspectives to ensure the motivation and support for tackling abstract concepts and novel, challenging tasks were suitably encouraged in a collaborative learning environment, while expertise was available from others within their cohort, from their lecturer, or externally available.

Bandura's social learning theory (1977b, 1986) shaped the use of observation through symbolic modelling to guide the learners' development of concepts for the introduction of weblogs. Concurrently, learning activities that both activated and maintained positive self-efficacy play a critical role in the design of the 5SPF. However, Bandura's work did not sufficiently clarify some of the nuances in learner behaviours that had been observed from practice in the early versions of development of the framework. At this point, Vygotsky's social development theory (1978) was reviewed and found to be valuable for informing further aspects for designing the 5SPF, as outlined below.

3.2.1.2 Vygotsky's social development theory

…the notion of learning as a process of inquiry…that meaning is constructed through the process of articulating ideas…includes both the transformation of inner speech to public speech in exploratory ways as learners tentatively propose and reflect on ideas in the pursuit of answers to authentic questions…

(Lee & Smagorinsky on Vygotsky, 2000, p. 6)

Vygotsky's (1978) work relating to knowledge construction through the social process of language to verify the conversational and authentic opportunities for publishing

thoughts on weblogs to support the learners as they transformed materials being studied into a scaffolding for knowledge construction and meaning had been cited by other educators using weblogs and related learning technologies at the time of this study (O'Shea 1999; Ferdig & Trammell 2004). Based upon literature reviews of these concepts and a relationship to Bandura's (1977b) social learning theories, further examination of Vygotsky's concepts informed refinement and incorporation of principles outlined below into the development of the 5SPF.

Wells (2000) further developed Vygotsky's (1978) work and contributed to the assertion that learning is socially constructed through language and is collaborative, even when direct human contact is absent. Through the adaption of this theoretical perspective, the 5SPF emphasised the social context and collaborative environment of the weblog to support the process of inquiry and construction of meaning (Farmer & Bartlett-Bragg 2005).

Furthermore, other aspects of Vygotsky's (1978, 1986) work provided contextual guidance, which informed design elements of the 5SPF, in particular, the concept of knowledge clusters as a series of intellectual operations; the Zone of Proximal Development (ZPD) coupled with the importance of the More Knowledgeable Other (MKO); the learning environment as a context that influences what can be learned; and the focus on sharing knowledge to transform understanding that shifted attention from the individual to the impact of the group. Each of these themes will be explained in terms of its relationship and application to the design of the 5SPF.

Knowledge clusters

Vygotsky (1978, 1986) explained the formation of concepts as a series of intellectual operations that did not occur at a single point in time, but was a combination of processes that included attention, abstraction, synthesising, and symbolising as the meaning became successive approximations (Freeman 2000; Mercer 1994).

In the design phase of the 5SPF, through the identification of concepts that may be novel or underdeveloped for the learners, a series of activities were created to elicit both what the learners knew – as a baseline – and how the learners were applying meaning to each knowledge cluster.

The identification of concepts to be used as the knowledge clusters in the scaffolding of the 5SPF was based on the early formation and versions of the framework; see Section 3.1 in this chapter. These knowledge clusters informed a structure or type of scaffolding, a term used by Neo-Vygotskian theorists (Mercer 1994) to guide a learner through a task or activity that would not be achievable without the intervention or contributions of either others or specific pieces of information or examples. There is a correlation between these knowledge clusters and Bandura's (1977b) symbolic modelling that was reflected in the selection and design of examples and supporting activities in the 5SPF to enhance the formation of concepts.

Although her work was completed after the development of the 5SPF Framework for this study, Boettcher's (2007) report on the use of online platforms – discussion forums and weblogs – described them as valuable tools for both identifying and constructing knowledge clusters as the public publishing of concept formation, refinement and application is visible for all learners and their teachers and can be used to promote further extension of more complex concepts.

Furthermore, the development process of knowledge clusters and the identification of concepts that required additional scaffolding directly related to the application of Vygotsky's (1978) ZPD and MKOs.

Zone of proximal development (ZPD) and more knowledgeable others (MKOs)

> *...the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers.*

> (Vygotsky 1978, p. 86)

The nature of this research and the emphasis it places on the importance of networking and collaborative learning means that it would be remiss not to include Vygotsky's (1978) definition of the ZPD, above, arguably one of his most recognised contributions that appears in most educational psychology texts and more widely in other educational contexts (Chaiklin 2003). However, as Chaiklin (2003) highlights, the interpretation of Vygotsky's meaning is somewhat contentious due to the small amount of materials available directly from Vygotsky's writings before his early death. Nonetheless, the

diversity of concepts enables application of the ZPD to inform critical evaluation of pedagogical practices. In this study, the ZPD has been interpreted to define the boundaries of a learner's knowledge, in a given situation, while they are completing a process or task that will require further knowledge and participation with others (Chaiklin 2003; Wells 2000; Wertsch 1985).

In Vygotsky's (1978) definition, the adult guidance or MKO refers to someone who has a higher level of capability or knowledge, for a particular task, process or concept in a given situation, that can participate with the learner to guide and encourage (Mercer 1994; Wells 2000). Notably, Vygotsky (1978) did not imply the MKO had to be a teacher; the emphasis on learning from participating with peers was also present in his definition, which is consistent with the observed interactions between classmates in the early versions of the framework.

The early versions of the pedagogical framework distinguished that ZPDs are apparent throughout all levels of the 5SPF and that learners will stay within their ZPD, that is, known texts and subject scope, unless encouraged to extend beyond these limits, enabling both educators and learners to recognise and understand their ZPD limits and have strategies in place to manage the awkward or uncomfortable transition as the extension occurs. Tasks designed to help learners identify their limits relates to the development of metacognitive processes (see Section 3.2.3).

In the design of the 5SPF, the indicators that identified the boundaries of a learner's ZPD had been discerned during the early versions of the framework (see Section 3.1) where learners would express feelings of being overwhelmed or frustrated when attempting to complete a task; or complete withdrawal from further engagement. The intentional design in the final version of the 5SPF was to scaffold tasks to be just within the previously expressed ZPD limits, then to facilitate the engagement with MKOs to stretch the range of their ZPD before progressing to another task.

Designing to individual ZPDs is not always possible or feasible from a time or resource perspective; however, through the experience from the preliminary versions of the 5SPF and being aware of points where concepts or actions were likely to be novel and stretch ZPDs was a crucial component that was factored into the design of activities in the 5SPF. Embedding feedback cycles and achievable milestones consistently throughout

the 5SPF provided incremental change to each learners' ZPD that equipped them to more effectively manage their learning process as their levels of awareness increases.

The engagement with classmates through peer support had been evident in early versions of the 5SPF. Taking this into account and re-framing the peer support in terms of MKOs required the design of learning activities to encourage open sharing of learning activity outputs. In addition, the role of the educator in these activities became less significant to the learners, as their need for support was relevant to an immediate need or during a transition period of knowledge development (Chaiklin 2003). The relationship between the learner, the MKO, and the educator was a negotiated position that became a joint activity apparent through the conversational artefacts was made explicit in the weblog posts. The design of learning activities acknowledged the nature of this relationship and required the teacher's online presence to be discretely encouraging and supportive, while remaining available for further guidance. Online teaching approaches that correlate to this will be addressed in Section 3.3.

The learning environment

Vygotsky (1978) recognised the learning environment as a critical dimension that impacts how the learner will interact with content, knowledge, and other people. From this perspective, the socially constructed nature of learning will not be determined as much by the physical context as by the setting and relationships created by the participants (Wertsch 1985).

The complexity of the online environment in this study required consideration of not just the selection of software, and how the variety of interactions between learners, content and the lecturer would occur, but also the design of activities to foster engagement and collaboration. The key focus was shaped by creating the means for learners to build relationships, firstly with the software features, and secondly with the nature of their weblog posts with the intention to generate engagement.

Shared knowledge

Vygotsky focused on talk or dialogue as an important medium for sharing knowledge and constructing understandings, in particular context-formed settings (Mercer 1994; Wells 2000). An extension of this concept transforms the weblog posts into a form of dialogic writing where the process of articulating ideas becomes the learner's public

communication method for engaging with others. The discursive nature of weblogs was noted in Chapter Two, Section 2.3, along with the potential afforded through collaborative knowledge sharing and personal information management.

In this socially constructed setting, as the learners developed networked connections, sharing weblog posts enabled them to explore alternative perspectives and shape new understandings and knowledge. However, as Mercer (1994) points out, the success of learners in this process is shaped through the quality of their contributions with others. This viewpoint informed the design of writing activities and required the learners to develop a style that could clearly articulate their position. Further discussion regarding the development of reflective, critical thinking writing processes is outlined Section 3.2.3.

The combined principles of socially oriented theories of learning from Bandura (1977b) and Vygotsky (1978) contributed valuable theoretical perspectives to the structure and organisation of learning tasks in the final version of the 5SPF. In the next section, Lave and Wenger's (1991) situated learning and perspectives on communities for learning augmented and further shaped the final version of the 5SPF.

3.2.1.3 Lave & Wenger's situated learning

Conceiving of learning in terms of participation focuses attention on ways in which it is an evolving, continuously renewed set of relations…

(Lave & Wenger 1991, p. 50)

Situated learning or cognition (Lave & Wenger 1991) characterises learning not as individual mental states, but in terms of relationships between individuals and the situation, where learning occurs as a process of engagement within a community of practice (as mentioned in Chapter Two, Section 2.2.4).

Lave and Wenger (1991) introduced a dimension to learning within communities through the actions of participation. Not dissimilar in underpinning assumptions to Bandura's (1977b) observational model and Vygotsky's (1978) ZPD and MKOs, the principle of participating as a newcomer to a community where knowledge is shared described the process of learning through 'legitimate peripheral participation' (Lave &

Wenger 1991, p.29) – where the novice learns from more experienced participants and over time gains confidence and adequate knowledge to move to full participation. Wenger (1998) further expanded the concept of participation by referring to it as '… a process of taking part and also to the relations with others that reflect this process. It suggests both action and connection' (p. 55).

Lave and Wenger's (1991) concept of legitimate peripheral participation was particularly relevant to the 5SPF as a basis for understanding the observed behaviours of students who, in the early versions of the framework, withdrew from writing weblog posts but stayed connected through the participatory act of making comments on the weblogs of other students. In the design of the final version of the 5SPF, this indicated the need for additional support to create a sustainable learning environment for those students who were not feeling adequately confident or lacked the self-efficacy described by Bandura (1977a, 1977b, 1997) to continue. The design of learning activities to incorporate the value of Vygotsky's (1978) MKOs and the use of guided participation to extend the forms of communication to include feedback loops, such as comments on others posts, were designed to increase relationships, viewed as a central element to participation (Lave & Wenger 1991; Wenger 1998).

Notwithstanding the implications of relationships and situation addressed by Lave and Wenger's (1991) situated learning, the distinction between communities and networks of learning, as discussed above in Chapter Two, Section 2.2.3 and Section 2.2.4, required a deeper understanding of the theoretical perspectives evolving with the introduction of social software.

In the next section, emerging theories of networks and related learning networks at the time of the study will highlight the influential aspects on the design of the final version of the 5SPF.

3.2.2 Learning networks

The emergence of social software rapidly identified early patterns of behaviour that saw people using weblogs and associated technologies to establish connections with others, creating social networks. The science of network theories and analysis was not new;

however, networks enabled by internet saw the inception of concepts such as small world effect, random graph models, scale-free networks, to name just a few (Newman 2003).

Early publications (Barabasi 2003; Buchanan 2002; Watts 1999, 2004; Weinberger 2002) investigating the social networking phenomenon were critical influences for developing an understanding of network development, which contributed to the inclusion of activities within the final design of the 5SPF.

As highlighted above in Chapter Two, Section 2.3, a number of published papers and studies had recognised the potential to create learning networks (Arsenault & Morse 2004; Dede 2004; Efimova & Fiedler 2004). For the purpose of this study, the dynamic of social networks related to how people were using them to create patterns of connections and the nature of interactions that were occurring from a learning perspective.

The core proposition of the social network was making connections, as fundamental as who knows who, and exchanging information (Rheingold 2002), the central element being the individual, who is autonomous and viewed as a communication node within the network (Bryant 2003; Watts 1999, 2004; Downes 2005). The influence of this individual focus for creating networks impacted the final design of the 5SPF. An emphasis was placed on establishing a personal profile, the About Me page on a weblog, but also to produce quality content and share resources that would be considered valuable by connections in their network.

Granovetter's (1983) theory of strong and weak ties relates to the strength of a connection, a concept explored further by Watts (1999) and later Barabasi (2003). People we know well, professionally or personally, are strong ties, while our acquaintances or friends of friends are our weak ties. Granovetter (1983) asserts that understanding the importance of weak ties, acquaintances, is central to developing and maintaining a knowledge-sharing network. Our strong ties are likely to be more motivated to participate (in a similar vein to Vygotsky's 1978 MKOs); however, the weak ties contribute to a wider, more diverse perspective on topics, enriching the learning opportunities.

The DLN is this study facilitated the freedom for learners to select and negotiate their network connections; however, as the concepts of creating and participating in a network was not familiar, time was spent outlining the basic concepts of online networks and strategies for locating and establishing connections embedded in the learning activities, particularly at Stage 4 in the 5SPF (see Section 3.8), while the development of a personal profile was constructed from Stage 1 through to Stage 3 where the emphasis on the About Me page was their self-representation (see Section 3.7).

As the data was being collected for this study, Siemen's (2005) learning theory, Connectivism, was published. As such Connectivism was not an influence on the final design of the 5SPF. However, there is alignment with the overall pedagogical approach in this study and the principles in Connectivism that learning is focused on building and maintaining relationships through connections – people, content and resources are the essential ingredients. Key from an educator's perspective is exposing the learners to networks and providing them with opportunities to connect, and gain self-efficacy while building and maintaining their network (Dron & Anderson 2009). This principle represents the final stage in the 5SPF, where the learners have established a DLN and are confident to continue participation in their network with limited guidance. From this position it could be contended that the 5SPF provides a complementary pedagogical framework for learning in a connected world as proposed by Siemens (2005).

The DLNs in this study were created by the learners with the intention to extend divergent thinking beyond the usual boundaries of a subject or institution related group or community, to connect and share with others. The principles of network theory, the creation of connections, the impact of the personal profile, and the sharing of content and resources were embedded activities in the final design of the 5SPF to facilitate the successful establishment of a DLN.

3.2.3 Critical reflection on practice

The introduction of weblogs as reflective learning journals was my initial interest in social software as a pedagogical approach (see Section 3.1 in this chapter). However, it became evident through observing the learners' use of weblogs, there was more

potential for self-publishing that extended to developing DLNs. Regardless of the shift in purpose, the overall pedagogical approach required the learners to develop reflective writing and critical thinking skills as a fundamental feature of self-publishing to their weblogs. What did change was how these pedagogical strategies were embedded in the design of the learning activities in the final version of the 5SPF.

Critical reflection on practice became the foundational pedagogical strategy included at all stages in the 5SPF. The focus of writing quality weblog posts was the main instrument for communicating, representing themselves and building relationships, and as a result the writing tasks in the 5SPF focused on reflection and critical thinking, emphasising the capability to reflect upon past experiences, associate new and existing concepts, question assumptions, and develop opinions with the intention of engaging in meaningful online interactions with others.

The key theoretical perspectives that influenced the design of these learning activities are included in this section, grouped together to represent the interconnected nature of the principles of reflection, critical thinking and metacognitive processes. Concluding this section is Marton and Booth's (1997) anatomy of awareness that describes the surface and deep approaches to learning that had been used to assess the learners' level of application of the reflective and critical thinking tasks in the preliminary versions of the framework (Section 3.1).

Reflective learning

A core influence on the preliminary versions of the pedagogical framework and subsequent design of the final version, the 5SPF, was the literature on reflective learning (Boud 2001; Boud, Keogh & Walker 1985; Candy, Harri-Augstein & Thomas 1985; Herron 1985; Knights 1985; Main 1985; Schön 1983, 1987; Walker 1985). Embedded in the pedagogical strategies of the 5SPF are learning tasks that require the development of the reflective writing processes. The weblog provided the learner with an opportunity to self-publish their thoughts, describe initial experiences, or comment on events immediately, without the experience becoming construed or influenced by other sources. The post could then be returned to when further knowledge had been developed or new concepts had been added which afforded a deeper interpretation of the learning task or topic to occur. Walker (1985, p. 63) comments that '…creative

interaction with one's own development helps to ensure that new knowledge is incorporated in, and integrated with, existing knowledge'.

Critical thinking

The concept of reflective learning is considered an essential element of the critical thinking process that entails more than skills of logical analysis (Brookfield 1987). Critical thinking required the learners to question underpinning assumptions that relate directly to their usual ways of thinking and behaving in given contexts and being prepared to alter their thinking and act differently on the basis of the critical questioning and outcomes.

Embedding critical thinking activities into the pedagogical approach would enable the learners to recognise the diversity within a DLN and engage in debates relating to topics by questioning not only their own position, but analysing and evaluating the position of others within their network of connections.

In the preliminary versions of the pedagogical framework, participants had not displayed this type of thinking and interactions until the later stages of the blogging processes (see Section 3.1.1 in this chapter). In the 5SPF, learning activities that required the development of critical thinking were introduced in Stages 4 and 5 (see Sections 3.8 and 3.9 in this chapter), once the learners had become accustomed to the process of self-publishing.

Metacognition

Associated with the reflective learning and critical thinking perspectives, a relationship with metacognitive processes were considered essential in the overall pedagogical approach, hence the importance to incorporate metacognition into the design of learning activities in the 5SPF.

Metacognition has been depicted as the degree to which learners are engaged in thinking about themselves or monitoring their own thoughts, the nature of the learning tasks, and the social contexts (Brown 1987; Flavell 1976, 1987; Kuhn 2000), while Sternberg (1998) extends the outcome of metacognitive process to the acquisition of expertise, which would be the long-term aim of the 5SPF, to facilitate continuing engagement in a DLN, without continual educator support.

The intention was to empower the learners with the awareness of how they approached novel concepts and tasks, in particular relating to the use of technologies, that would enable them to develop personal learning strategies that permitted them to generalise the experiences and make them transferrable to other contexts. Establishing awareness and guiding how they learned to gain the skills and knowledge to effectively use the features, while acknowledging that new social software products were being released frequently, and with ongoing capability development in mind, being able to both understand and then transpose their experiences to any new social software application was considered an essential skill for the future.

Web-based studies had shown that learners with highly developed metacognitive skills displayed flexible planning, continuous monitoring of their learning process, and thoughtful evaluation of their own understandings, in contrast with learners with a low level of metacognition who tended to become disoriented in the web-based learning environments (Lee & Baylor 2006). These results aligned with observations made during the initial designs of the 5SPF and reinforced the need to embedded strategies to enable metacognitive development into the learning tasks. Typically, these activities required learners to write short descriptions of their processes and experiences, as a reflective writing task but with specific guidelines to consider how they approached the task of learning about new software or the focus of the learning activity. Additionally, publishing these experiences to their weblogs made their actions explicit and open to review from others who were able to compare them with their own experiences, or discover different approaches to a task.

The development of metacognitive awareness was expected to further encourage development of self-efficacy (Bandura 1977a, 1997) and have the potential to assist learners recognise their ZPDs (Vygotsky 1978) to enable them to extend their approach to tasks based on this knowledge of their learning process.

Anatomy of awareness

Marton & Booth (1997) describe an anatomy of awareness that produces either a surface or deep approach to learning. A surface approach views the learning task in an atomistic or granular manner that processes the items to be accomplished as individual pieces, whereas a deep approach to learning requires a holistic viewpoint that seeks to integrate meaning and the ability to adapt learning into other contexts.

In early versions of the pedagogical framework, learners had been observed approaching more complex tasks with a surface approach, demonstrating a low level of task completion and ability to transfer the concepts or skills to other similar tasks. A connection between the learner's metacognitive capability and their ZPD (Vygotsky 1978) was apparent when a surface approach to a task was used. To facilitate the development of a deeper approach to learning, activities in the final version of the 5SPF were designed in small, achievable chunks that embedded a metacognitive element. Continual reinforcement of these processes was intended to support learners maintaining a deep approach to learning throughout all stages of the 5SPF.

This section has reviewed the reflective and critical thinking perspectives of learning and their value for building learner capabilities to establish relationships through self-publishing to engage in dialogue with members of their DLN. Underpinning these are the metacognitive processes and deep or surface approaches to learning tasks. Understanding the learners' approach to these theoretical perspectives of learning was considered essential as part of the design of this research study.

In the next section of this chapter, the pedagogical models that provided guidance for teaching and assessment strategies are outlined: Salmon's (2000) Computer Mediated Conferencing model (Section 3.3.1) and Baumgartner's (2004) modes of teaching (Section 3.3.2). The approach to assessment in the 5SPF was informed by various authors relating to authentic assessment strategies (Attwell 2007, Boud 2000, Shepard 2000) (Section 3.3.3).

3.3 Pedagogical models that influenced the 5-Stage Framework

The aim of this thesis was to investigate the learners' collective experience of self-publishing and developing DLNs. To achieve this aim, there was a need to create a pedagogical approach that addressed the new ways of integrating social software within educational settings. The overall pedagogical approach adopted for this study included the design of a pedagogical framework, the 5SPF, which was informed by the preliminary versions outlined in Section 3.1, and the theoretical perspectives outlined in Section 3.2. Additionally, the pedagogical approach required the integration of an online teaching model that would support the design of learning activities in the 5SPF.

The two dominant influences on the approach to teaching in the design of the 5SPF were, firstly, Salmon's (2000) CMC model that outlined stages of development associated with both the learner mastering the technological aspect and the educator, e-Moderator, managing the stages of development; see Section 3.3.1. Secondly, Baumgartner's (2004) prototypical models of education directly related to three modes of teaching that described requirements for educational environments and related these features to approaches required for self-publishing technologies; see Section 3.3.2.

Additionally, a review of assessment strategies and how traditional practices required a novel approach that re-framed practices that were current at the time of the study; see Section 3.3.3. Of particular note was the development of Boud & Falchikov's (2007) scheme for developing informed judgement, published after the design of the 5SPF that aligns to the assessment strategies included in the framework at the time of the study in 2005.

The pedagogical models, Salmon (2000) and Baumgartner (2004), will be overviewed below and the critical features that were applied to the design of the 5SPF will be highlighted.

3.3.1 Salmon – Computer Mediated Conferencing

In my practice as an educator, Salmon's (2000) work was the most influential model that was applied initially to the context of using LMS discussion forums, and other group-based discussion boards that were available at the time. However, I soon recognised the value in the underlying principles would transfer to other contexts, in particular for the introduction of new social software platforms, and specifically, the use of weblogs for learning contexts.

However, by 2003 (Bartlett-Bragg 2003a, 2003b), a point of departure from the CMC model was evident and required a new perspective that recognised the difference of self-publishing technologies against the context of asynchronous discussion forums used within the LMS framework, constrained by subject and time; see Chapter Two, Section 2.2.2.

The CMC model published by Salmon (2000) originated from the Open University (OU) in the United Kingdom and was based on research conducted in 1995 in the Business School. The OU has been a pioneer in the integration of technologies into their distance-based courses and was one of the first, in 1988, to introduce CMC as a new context for distance learning programs that provided a method for richer interaction with students, rather than relying on more traditional methods (Salmon 1999).

The CMC model highlighted the importance of set up and framing learning tasks in the initial stages of technology introduction to reduce the negative impact on the learners that would likely result in difficulties being encountered at later stages. By spending time and attention on carefully constructed steps that moved the learners gradually from novice to mastery, at each stage, provided the potential for greater achievement in the later stages. In addition, the role of the e-Moderator in the development of both technical and learning skills acknowledged their significance in the development of subject related knowledge, a fact frequently ignored at the time of the study and one that continues into contemporary technology-based learning environments. This approach corresponds with Vygotsky's (1978) ZPD and MKOs, further reinforcing the importance of combining task design with peer or educator support.

An overview of the CMC model, describing the core components where each stage is divided into mastery of specific technical skills from the learner's perspective and the e-Moderating actions to provide guidance to the teacher/educator, while highlighting the points of departure from the 5SPF, will be outlined below.

Stage one – access and motivation

The primary objective is to enable participants to gain access to the required systems, while providing a clear purpose for doing so. The attention is focused on technical support and encouragement. The e-Moderator pays attention to participants who may require additional one-on-one assistance, while spending time welcoming and acknowledging the introductory posts being made. These factors are stated as being essential for enhancing the motivation of learners to not only return to the online environment but also to contribute to initial conversations.

There are strong underpinning principles from this stage that informed the design of the first stage in the 5SPF. The foundational effort that focused on ensuring the access and

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set-up of technology was achieved and that the appropriate levels of support were readily available also corresponds with Bandura's (1977a, 1977b, 1986, 1997) symbolic modelling and self-efficacy principles, while drawing upon Vygotsky's (1978) ZPD and MKO elements.

The pronounced point of departure in the design of the 5SPF from the CMC model relates to the fact that it was designed for asynchronous discussion forums, a technology platform that is relatively basic to set up within the LMS of an educational institution. In the 5SPF, recognition that social software and in particular weblogs required scaffolding to grasp the concepts expands the core foundational work beyond the basic technology set-up and access for asynchronous discussion forums of the CMC model.

Stage two – online socialisation

In stage two of the CMC model, as the participants become more familiar with the technology, the purpose moves towards constructing an online sense of community and relationships that will encourage sharing and contributions in all future stages.

Salmon (2000) emphasises the importance of creating social connections at this early stage in the online group formation, regardless of whether there is a face-to-face component or purely online engagement. As with a new group in a face-to-face environment, some level of introduction and socialisation occurs before subject related content that requires a knowledge exchange or personal opinion is initiated.

The 5SPF deviates from the CMC model at this stage, predominantly on the basis that relates to development of online group cohesion. As the CMC model is focused on cohorts of learners based in asynchronous discussion forums, the relationship between people is critical, whereas the 5SPF is focused on developing self-publishing capabilities to establish a DLN.

Stage three – information exchange

The objective at stage three is to introduce activities that require the learners to interact with both each other and subject-related content. The intention is to keep the barriers to participation low by using straightforward tasks that focus on presenting information or data and asking for answers to issues, while encouraging opportunities to share additional information from personal research.

The e-Moderator provides guidance to avoid feelings of information overload by highlighting current and relevant posts. Sequencing appropriate quantities of content, ensuring learners are becoming less focused on the technology, and shifting the attention to interacting with each other and the content needs to be effectively balanced. The prescribed approach for e-Moderators at this stage appears to have strong connections to a cognitivist approach to teaching, which could be associated with Baumgartner's (2004) Mode 2, as outlined in Section 3.3.2.

The 5SPF was informed by the approach taken at this stage in the CMC model to design the initial writing tasks that were to be published by the learners on their weblogs. Cognisant of potentially overwhelming novices with unduly complex actions, yet providing content that was task-action oriented and engaging was the fundamental principle to gain more confidence with the mastery of the self-publishing platforms.

Stage four – knowledge construction

The objective at stage four is for participants to achieve confidence in the online learning environment that enables them to develop interactions with others and the content that leads to knowledge construction.

At this stage in the CMC model, the learning becomes active and highly collaborative, with the learners demonstrating a degree of self-direction without the direct intervention of the e-Moderator. Although still actively guiding the learners towards relevant content and encouraging contributions, Salmon (2000) describes a shift in the e-Moderator's locus of power towards a less hierarchical, more equally communicative role.

Stage four in the CMC model influenced stage four in the 5SPF where the participants will have achieved similar levels of confidence that allows the technology not to dominate the learning processes and where activity moves to self-directed interactions with others. The distinct shift in the role of the e-Moderator additionally highlighted a point where the role of the educator in the framework was intending to be positioned, which aligns with Baumgartner's (2004) Mode 3 teacher as discussed in Section 3.3.2.

Stage five – development

The final stage in the CMC model outlines the learners as becoming responsible for their own learning, with little technical support required. By this stage, the learners

would be demonstrating critical thinking skills and metacognition, while actively debating concepts with others.

The e-Moderator is described as using constructivist techniques that encourage reflection and connecting ideas with others in the group. As this is the final stage of the CMC model, the e-Moderator will additionally be tasked with closing the forums and assisting learners to summarise their learnings, move on, or capture any items of value before the technology platform is closed.

At this closing point in the CMC model, the 5SPF aligns with its fourth stage, where reflective practices and connection of ideas by critiquing content from others in their direct subject cohort, or extending their commentary to include people external to their direct contact, and publishing ideas on platforms outside the boundaries of the institution or organisation are intended.

Unlike the CMC model, at stage 4 and 5 in the 5SPF, the learners are at the beginning of their extended learning experiences through the initiation of connections for their DLN, rather than a point of closure.

In Part 2 of this chapter, contained within the description of the 5SPF, the CMC model will be identified where further points of influence and similarity are apparent and where points of departure from the model are evident.

3.3.2 Baumgartner's prototypical models of education

An educator's existing practice, or teaching approach, developed through formal studies and influenced by organisational culture and training policies, may impact the learners' ability or motivation with independent, self-directed activities, and in participatory knowledge sharing contexts. Additionally, when introducing new technology-based learning environments, the teaching approach can affect how the learner perceives of and uses the platform to achieve specified learning tasks.

Baumgartner's (2004) prototypical models of education provided a key framework that influenced the development of the 5SPF to include teaching modes or approaches, required at each stage to achieve the overall intended outcomes. Whereas Salmon's

(2000) CMC model labelled the role of the educator as the e-Moderator and defined the activities appropriate to different stages as the learner progressed through to the final knowledge construction stage, Baumgartner (2004) positions the role of the educator and the associated approach as pivotal for the learners to achieve the desired outcomes with the use of technologies.

Baumgartner's (2004) Modes of Teaching represents the three approaches; see Table 3.1. Each mode will be described below and related to its influence on the 5SPF.

Table 3.1 Baumgartner's (2004) Modes of Teaching

	Mode 1: Transfer (Directed Teaching)	Mode 2: Tutor (Facilitated Learning)	Mode 3: Coach (Informal Guide)
Learning environment	Programmed instruction	Problem solving	Complex simulations
Educator's approach	To teach, to explain	To observe, to help, to demonstrate	To co-operate, to support
Design of learning activities	Production of correct answers	Selection of methods and its use	Realisation of adequate action strategies
Learner actions	To know, to remember	To do, to practise	To cope, to master
Learner knowledge	Transfer of knowledge	Presentation of pre-determined problems	Action in real situations (complex and social)

Mode 1: Transfer – Directed Teaching

Baumgartner (2004) describes this mode in terms of a behaviourist approach to learning where the teacher controls the knowledge and it is their responsibility to pass it on, or transfer it to the learner in the simplest way possible that will enable long-term memory of the content.

It was shown that by taking a Mode 1 approach to the 5SPF, an expected result was that constrained learners will become reliant upon the educator for direction and instruction, rather than empowering them to be independent, self-directed learners connecting to others as the DLN was developed, or interacting with MKOs (as Vygotsky 1978 had identified as an important part of the learning process).

Mode 1 is a familiar pattern for most educators where the emphasis is on delivery of content in short timeframes, or where skill acquisition is based on repetition of tasks with feedback loops. In higher educational institutions, a number of factors reinforce the Mode 1 approach, such as the focus on the individual student and their qualification

achievement in fixed timeframes; large numbers of students in one hour lecture theatres; lecturers recognised as the subject matter experts; and lack of opportunity for professional development to expand teaching skills of lecturers or awareness of alternative methods for content delivery.

Mode 2: Tutor – Facilitated Learning

Baumgartner (2004) associates the Mode 2 approach to learning with cognitivism. In contrast with Mode 1, where the teacher approach is underpinned with control, Mode 2 takes a more holistic approach that centres on problem solving based on progressive steps under guidance, and where teacher feedback focuses on reflection and correcting assumptions with the intention to build a consistent mental model for the learner. The learning outcomes are frequently pre-determined and the learner is guided to appropriate resources, materials or steps that will assist them to solve the problem to achieve the desired outcome, typically with only one clearly defined solution.

The Mode 2 teacher is described as more of a facilitator, while managing the specific learning environment and providing directions. In a higher education institution, a Mode 2 approach is more likely to be present in a tutorial or practical session than a lecture theatre.

In the 5SPF, the Mode 2 approach was identified as a valuable starting approach, where not only was guidance required, but also the construction of mental models needed to be formulated while the learner was introduced to new and novel experiences. However, this was identified as useful only in the initial stages and would not be an approach to be maintained throughout the framework. By stage three of the framework, once the technology foundations were established and the scaffolding for developing DLNs was created, the educator would be required to move beyond the Mode 2 approach into Mode 3.

Mode 3: Coach – Informal Guide

Baumgartner (2004) relates the Mode 3 approach to constructivism and suggests that it is less of a teaching mode than the other two modes, where there is neither complete control of the learning situation nor pre-determined outcomes. The distinguishable difference between learner and teacher can be associated with the levels of experience or capabilities to reflect upon complex situations.

The learning experience is described in terms of an active process with knowledge being constructed from previous experiences. The problem is not the core object of learning with focus shifted towards more self-directed, independent learning based upon open communication with the Mode 3 teacher.

The Mode 3 approach to teaching is less likely to be apparent in learning environments where resourcing constraints such as time-bound courses, skills acquisition, and funding arrangements are not aligned to a culture that supports a more independent learning approach.

In the later stages of the 5SPF, a Mode 3 approach was the desired state to fully enable the learners to develop their DLNs. Even working within the constraints of time and subject, the framework activities were designed to give the learner autonomy and control to complete their work without the direct instruction from the educator.

Application to the design of the 5-Stage pedagogical framework

Baumgartner (2004) concedes that no single mode of teaching will apply in all circumstances and that the modes are not constrained by subject content. In recognition of this position, the three teaching modes were applied to the 5-Stage pedagogical framework by reviewing the stages previously observed in practice, and then determining which of the three modes was the more appropriate but always with awareness that the Mode 3 approach was the final state that would be required to fully support the development of the learners, as intended in the framework.

The resultant application of the teaching modes considered the type of knowledge required at each stage of the pedagogical framework, the importance of that knowledge in terms of value to the overall intended outcome, and the provision for developing reflective, self-directed learning practices.

In Part 2 of this chapter, as each stage of the 5SPF is described, the associated mode of teaching, influenced by Baumgartner's (2004) work, will be positioned.

3.3.3 Authentic assessment strategies

Informed by an approach that assessment was a requirement within the educational institutional framework but also an ongoing process that focused on learning and improving curriculum (Ewell 2004), re-thinking the pedagogical approach to incorporate social software required consideration of how assessment practices would be integrated to support the subject outcomes and vocational accreditation requirements.

Conventional assessment practices in higher education settings at the time of the study tended to focus on the learners producing outputs that demonstrated knowledge of subject content within an institutional culture that is reinforced when learning is restricted to cost efficient methods that related only to the scope of the subject (Bartlett-Bragg 2008c; Shavelson 2007). In addition, LMS were being used as a system of assessment to create multiple choice quizzes and other computerised testing with automated feedback, a strategy that had little relevance to the learning process and produced no significant change in learning outcomes (Zemsky & Massy, 2004).

A review of assessment research studies and journal articles published at the time of the study (Attwell 2007; Boud 2000; Shepard 2000) indicated a perspective that was aligning with the potential afforded by the integration of digital spaces and the use of social software to develop a multi-faceted assessment strategy with self-managed artefacts presented as a portfolio at the completion of the subject.

While addressing the options for alternatives to paper-based essays and projects, I explored authentic assessment methods that aligned to the influential theoretical perspectives:

- Vygotsky (1978) – allowing learners to discover ways of scaffolding of knowledge through social interactions with others;

- Lave and Wenger (1991) – the significance of situated learning and legitimate peripheral participation; and

- Bandura (1977b) – enabling symbolic modelling and methods for developing self-efficacy and the expectation of achievement.

In 2008, I published a peer-reviewed paper for the EdMedia 2008 conference (Bartlett-Bragg 2008c), which further examined the early findings from this study that directly related to the assessment strategies employed in the 5SPF. Significantly, work published by Boud and Falchikov (2007) aligned to the strategies and underpinning theoretical approaches for assessment in 2005.

Boud and Falchikov's (2007) scheme to develop informed judgement provided a framework to review assessment tasks in the 5SPF to emphasise evaluative expertise. The key elements are outlined as five overlapping components:

1. Identifying self as an active learner;

2. From known to need – identifying own level of knowledge and the gaps;

3. Practising testing and judging;

4. Developing judgement skills over time; and

5. Embodying reflexivity and commitment.

Boud and Falchikov's (2007) scheme was used as a point of reference for the assessment strategies incorporated in the 5SPF. The scheme is represented in Table 3.2 in Part 2 of this chapter to demonstrate how the activities and tasks in the 5SPF were aligned to the scheme and validated the integrated approach taken.

The final assessment strategy included both a summative and formative approach to foster development of self-directed learners that resulted in embedded learning tasks that promoted problem solving, collaborative knowledge sharing, and an ongoing focus on sustaining the process of learning, not just the subject content

Although this research study did not focus specifically on the design and effectiveness of the assessment strategies, it was an integral part of the design of activities within the 5SPF. An opportunity for further research into assessment procedures related to pedagogical approaches for self-publishing software is discussed in Chapter Six, Section 6.2.2.

3.4 Part 1 Summary

Deviating from a traditional literature review, this chapter has followed the theoretical perspectives that influenced the design of this project. The objective of Part 1 was to trace the development of thinking that shaped the pedagogical approach and development of the final version of the framework, the 5SPF, for the introduction of social software into educational settings. By situating this study in the theoretical landscape of the time, it has provided a description of the key influential perspectives: Bandura's (1977a, 1977b, 1986, 1997) social learning theory (Section 3.2.1.1); Vygotsky's (1978) social development theory (Section 3.2.1.2); Lave and Wenger's (1991) situated learning (Section 3.2.1.3); the initial literature on learning networks with the social software (Section 3.2.2); the reflective learning, critical thinking, metacognitive perspectives (Section 3.2.3); and the existing pedagogical models from Salmon (2000) (Section 3.3.1) and Baumgartner (2004) (Section 3.3.2).

Through the integration of preliminary versions of a pedagogical framework into practice (Section 3.1.1), prior to the commencement of this study, I was able to critically observe the learners as social software was introduced into their educational settings. Based upon the review of literature (as outlined above), peer-reviewed feedback, and conversations with experts, the pedagogical framework (5SPF) was designed and used in this study as the keystone of the research design which enabled rich data to be collected that could address the research questions.

In the next part of this chapter, Part 2, the 5-Stage pedagogical framework (5SPF) will be outlined. Each stage will be described and an overview of the pedagogical strategy and theoretical influences will be highlighted. An appreciation of the pedagogical framework and associated strategies will facilitate an understanding of the design of this project and the related findings against each stage of the 5SPF in the first iteration of data analysis (see Chapter Five, Part 1).

Part 2: The 5-Stage Pedagogical Framework

3.5 Introduction

Part 1 of this chapter reviewed the preliminary versions of the pedagogical framework, together with the theoretical and pedagogical influences that underpinned the final version of the 5-Stage pedagogical framework (5SPF) used in this research project.

Table 3.2 represents a summary of the 5SPF and the relationship to each stage of the framework and the application of the pedagogical models (Section 3.3).

The first column represents the 5SPF and overviews the main learner actions in each stage. The second column aligns Salmon's (2000) CMC model with its five stages against the 5SPF, highlighting where the model informed the design and where it deviated. The third column represents Baumgartner's (2004) modes of teaching and indicates which mode of teaching was applied to the stages in the 5SPF. The final column outlines Boud and Falchikov's (2007) scheme for developing informed judgement and represents the learner actions at each stage, which aligns to the stages within the scheme.

Table 3.2 5-Stage pedagogical framework's relationship to pedagogical models

	Bartlett-Bragg (2007) 5-Stage pedagogical framework (5SPF)	Salmon (2000) CMC Model	Baumgartner (2004) Modes of teaching	Boud & Falchikov (2007) Scheme for developing informed judgement
Stage 1	**1. Establishment** Learners are setting up their personalised learning environments with social software	**1. Access & motivation** Setting-up technology and post simple introductory messages. Educator (e-Moderator) concentrates on technical support and welcoming/ encouraging participants as they complete tasks.	**Mode 2** Educator is providing assistance but encouraging learners to build their own environments. Some strategies may require demonstrations or examples of abstract concepts.	**1. Identify self as an active learner** The process of setting up the various software applications actively involves the learner in the selection and building of their environments – establishing an engagement in the processes.

	Bartlett-Bragg (2007) 5-Stage pedagogical framework (5SPF)	**Salmon (2000) CMC Model**	**Baumgartner (2004) Modes of teaching**	**Boud & Falchikov (2007) Scheme for developing informed judgement**
Stage 2	**2. Interpretation** Learners are personalising their structure and adapting the software, while developing their online identity in anticipation of future interactions in a network.	**2. Online socialisation** Simple task-oriented activities to continue technology set-up. Socially-oriented activities not applied to develop group cohesion, rather focused on reviewing and observing norms of behaviour for future participation in networks.	**Mode 2** Educator is observing and supporting through demonstration as learners adapt to their perceived needs.	**2. From known to need** Learners are developing a structure within their software environment based on their perceived needs (existing mental models).
Stage 3	**3. Reflective Monologues** Learners are publishing to their software platform and establishing their identity, or finding their voice.	**3. Information exchange** e-Moderator is encouraging sharing and interaction with others through basic tasks.	**Mode 2 – 3** Educator transitions towards Mode 3 by providing support and activities to assist learners to progress in a self-directed manner.	**3. Testing and Judging** As the learners perform writing and publishing tasks, feedback from the educator and peers informs further development of self-efficacy.
Stage 4	**4. Reflective Dialogues** Learners are extending their learning environment by starting to connect with others and developing their DLNs. Activities guide towards an awareness of readers.	**4. Knowledge construction** The technology no longer dominates learner actions, allowing tasks to become more self-directed towards interactions with others. The e-Moderator at this stage is most closely aligned to Mode 3 of Baumgartner (2004).	**Mode 3** The educator introduces activities to stimulate action towards further establishing connections with other learners.	**4. Developing skills over time** A period of confidence grows with the self-publishing techniques being practised; the learners establish more concrete examples.
Stage 5	**5. Distributed Knowledge Artefacts** Learners are collaborating with others in their DLN, distributing their work, and gathering artefacts for review and reflection.	**5. Development** Learners are at the beginning of extended experiences through their DLN – the e-Moderator facilitates the change in focus away from completion of the subject and cohort to ongoing maintenance of the learners' DLN.	**Mode 3** At this point, the educator could be viewed as the conduit and a co-participant in the learner's network – providing feedback towards future development.	**5. Embodying reflexivity and commitment** As both peer and educator feedback is received, the learners continue to adjust and improve their work. While gathering artefacts for final assessment.

The objective of the 5SPF was to facilitate the development of independent, reflective, critical thinking learners, allowing them to become proficient in the process of

establishing DLNs using weblogs and associated self-publishing social software technologies while extending the depth of their learning. The framework can be viewed as an enabler where the stages draw the focus not on the software selected by the educator to create the learning environment, but on the social aspects of the learning process and strategies to support the learning experience.

The progression through the stages was designed to acknowledge different levels of both technical and self-directed learning aptitude, which encouraged the learner to self-manage and personalise the processes. Although presented as a sequential framework, inhibitors may influence learners at any stage, requiring the attention of pedagogical strategies from an earlier stage to be foregrounded while the inhibitor can be addressed, and re-orienting the learner to the focus of the learning process.

An explanation of the pedagogical approach and learning activities at each stage is outlined in this section. In addition, the theoretical perspectives will be woven into the descriptions of each stage, highlighting their relevance to the specific stage of development. Figure 3.3 below is the graphical representation of the 5SPF.
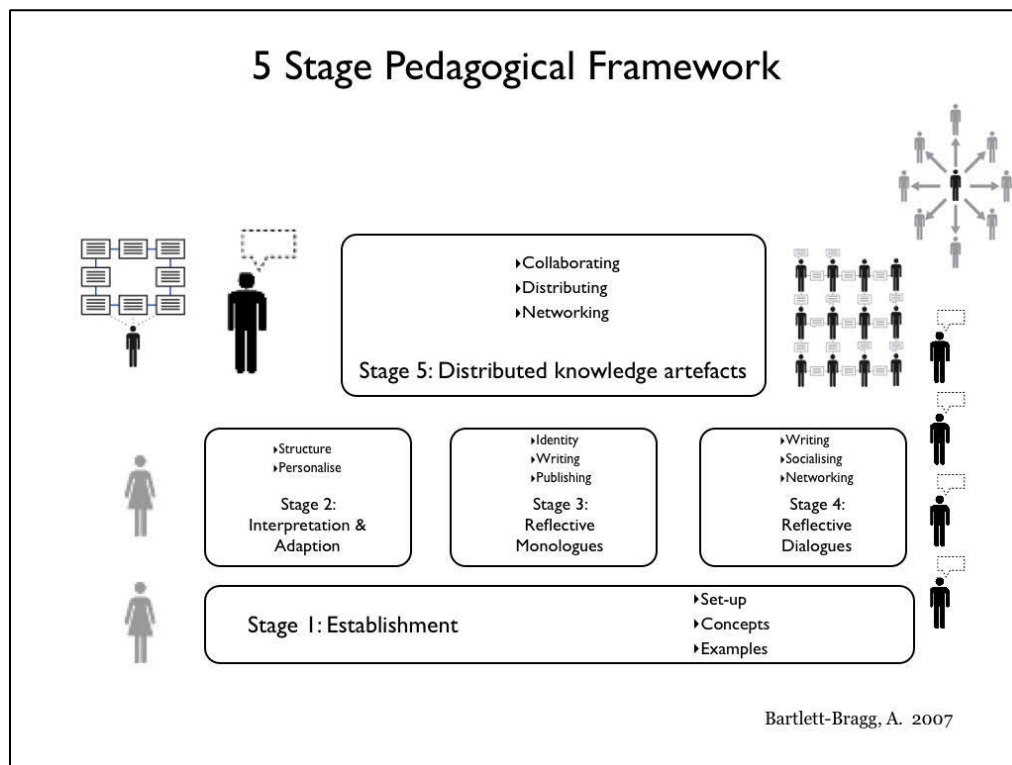
Figure 3.3: The 5-Stage pedagogical framework

A 'BlogQuest' that included a set of technical notes and screen shots supported each stage of the framework. The 'BlogQuest' was modelled on the genre of a 'WebQuest' (Dodge 1997), popular at the time of the study.

The following description of the stages in the 5SPF will provide the context for the design of the research methodological approach (outlined in Chapter Four), and the contextual relationship for the first iteration of data analysis (see Chapter Five, Part 1).

3.6 Stage 1: Establishment
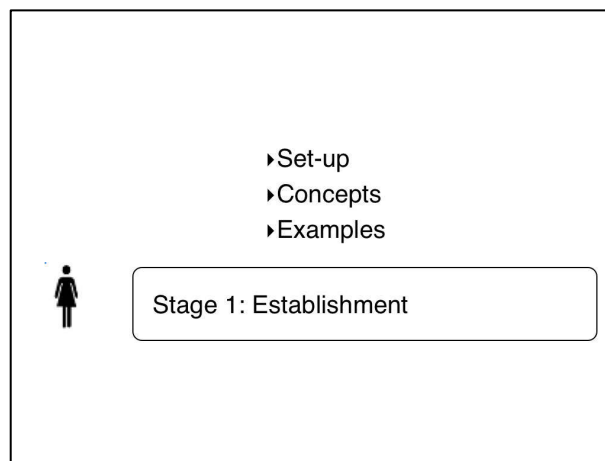
Figure 3.4: Stage 1: Establishment

Objective

The objective of Stage 1 is to introduce the concepts of self-publishing and DLNs and ensure successful set-up of weblogs.

Pedagogical approach

The foundation of the enabling process is a stage that is continuously present throughout all stages of the 5SPF. Activities completed during this stage introduce and frame the learning environment's technological and conceptual structure with examples or models for the learners to observe and examine. Bandura's (1977b) symbolic modelling underpins the selection of examples and is highlighted to draw the learners' attention to critical aspects for further application to their contexts.

In conjunction with the development of the conceptual structure, the introduction and set-up of the software platforms are established. Guidance and support from the educator is essential throughout this stage, as any technological challenge or miscomprehension of concepts can dominate the learners' attention and become an impassable barrier unless addressed. The technical capabilities, or digital literacy levels of the learner, are dominant throughout this stage. In addition, the learners' ability to generalise and conceptualise the use of the software can have profound effects on how they manage any challenges with the technology. At this point, the ZPD (Vygotsky 1978) for each learner will become evident – learners express their challenges with demands for the educator's immediate attention: 'show me', 'tell me', 'do it', or 'fix it for me' are common exclamations. Frustration and insecurity relating to their abilities to complete processes require all activities to be broken down into small achievable steps with examples to illustrate intended outcomes to support development of positive self-efficacy (Bandura 1977a, 1997).

Reponses from the educator to learners at this early stage require consideration and model patterns of behaviour that will influence future strategies and interventions. The need to avoid Baumgartner's (2004) Mode 1 helper/fixer style of directed teaching by focusing on Mode 2 questioning/guiding style of facilitation (see Section 3.3.2) or the longer term outcome will be learners retaining this stage as a dominant teacher dependent position requiring high levels of attention from the educator. Creating opportunities to engage with other learners can draw upon Vygotsky's (1978) MKOs and establish a valuable peer support framework.

Salmon's (2000) e-Moderator actions in the CMC Stage 1 were transferred from the asynchronous discussion forum actions of welcoming and encouraging learners to reassuring learners through comments posted to their weblogs as they were set-up.

Learning activities in Stage 1

- Explore definitions of weblogs

    As highlighted above in Chapters One and Two, in 2005 when the study was conducted, the general knowledge of weblogs was limited. It was critical that learners could differentiate between a weblog as a self-publishing platform and a typical, static HTML webpage. Classroom time was dedicated to exploring different types and uses for weblogs with the intention that learners were able to

conceptualise how their personalised weblog would develop throughout the subject.

- Anatomy of a weblog

  Throughout the process of distinguishing a weblog, the features and functionality were introduced, with supporting examples from existing weblogs.

- Set-up

  The basic sign-up process was completed, followed by the initial infrastructure aspects that included:

  - The selection of a URL;
  - The title or name of their weblog;
  - Navigating through the dashboard functionality;
  - Creating a post and publishing;
  - Managing and editing posts;
  - Enabling and managing comments;
  - Setting up categories;
  - Creating a list of useful links (or blogroll); and
  - Basic formatting of posts (which included some basic HTML programming guidance, for example, bold, bullet lists, inserting an image, and using quotes or indents).

- Sharing their weblogs

  Once set-up, all learners shared their weblog URL with their subject cohort through the university LMS discussion forum. This enabled them to subscribe to each other (through their aggregator) and receive notifications of new actions as they occurred.

- Setting up personal web-based aggregator platforms to subscribe to weblogs of interest both within the subject cohort and more widely available on the web. The dashboard-style functionality enabled learners to review all weblog updates in a single place, further prompting regular review and shared activity with others in their developing networks.

To encourage participation through the early phases of set-up, structured questions that related to the subject content were provided, first and foremost as a guide for contributions, but also to permit the learners to become familiar with the technology and the process of writing and publishing with the software.

3.7 Stage 2: Interpretation
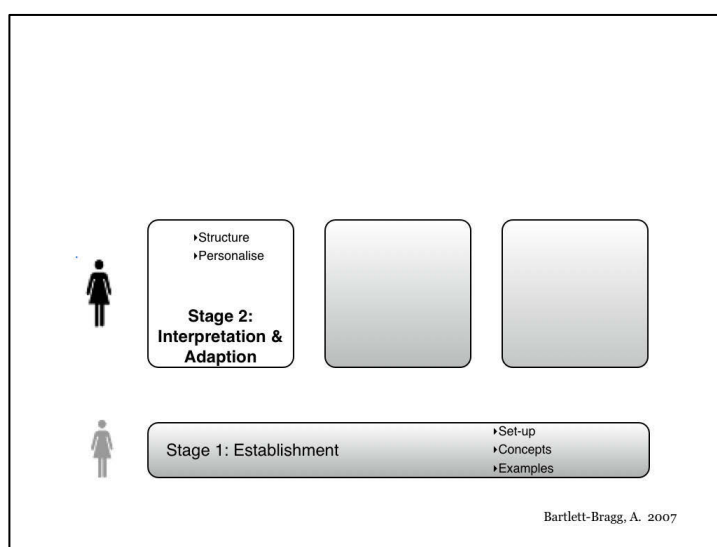
Figure 3.5: Stage 2: Interpretation

Objective

The objective of Stage 2 is to further expand on the structure of the weblog, emphasising the capability to personalise and adapt the software to meet the learner's individual preferences and self-representation.

Pedagogical approach

The core concept of this stage is to encourage learners to start using the software and personalising the basic structure. At this stage activities that demonstrate more software functionality and allow learners to develop personal information management are introduced – paying attention to the potential for learners to revert to Stage 1 if overwhelmed by new concepts and technology features that have been introduced too quickly. The variation in individual ZPDs (Vygotksy 1978) can influence participation,

with activities designed in small, achievable steps also supporting their self-efficacy (Bandura 1977a, 1997).

Personalisation, shaped by interpreting examples, draws further upon Bandura's (1977b, 1986) symbolic modelling and is intended to reinforce individual ownership of and responsibility for the content and presentation of the learners' work, not solely for their own consumption, but also as a communication tool to others as they start to develop their DLNs in future stages.

Small writing activities that relate directly to topics being studied and respond to focus questions provide guidance for practice and familiarisation with the basic publishing processes, while encouraging learners to start applying tags and categories to posts, providing an opportunity to organise and build their personal information architecture. Learners are encouraged to continue recording and posting learning events, while paying attention to their reactions and emotions, enabling them to start evaluating their experiences from a learning perspective, developing self-awareness and metacognition (Boud, Keogh & Walker 1985; Flavell 1976, 1987; Knights 1985; Walker 1985).

Information management can be a conceptual challenge for learners during the personalising and set-up of their space. Again, the value of symbolic modelling (Bandura 1977b, 1986) that highlights how others have established a structure for their information can allow learners to adapt the concepts to their own learning context.

The educator provides support by using Baumgartner's (2004) Mode 2 style of teaching and manages the learners' levels of anxiety and frustration that can occur and be directed towards the educator with possible rejection and disengagement with the learning activities.

Salmon's (2000) CMC model and actions of the e-Moderator were not incorporated in this stage of the 5SPF. The CMC model, at stage 2, is focused on creating a socially cohesive group of learners within the LMS discussion forum, which is a point of departure from the objective of the 5SPF at this stage.

Activities in Stage 2

- Planning and implementing information architecture, specifically related to how to use categories, hyperlinks, and useful link lists to manage and display information on their weblog.

- Display theme
  Selecting a theme design for their weblog, further personalising how the weblog represents them personally.

- Posting and publishing
  Writing tasks which including the use of categories for information architecture.

The conceptual frameworks established during Stage 1 are the essential foundations that require the educator to provide guidance through modelling and examples. This stage expands these concepts, encouraging the learner to personalise and take responsibility for the structural aspects of their weblogs.

3.8 Stage 3: Reflective Monologues
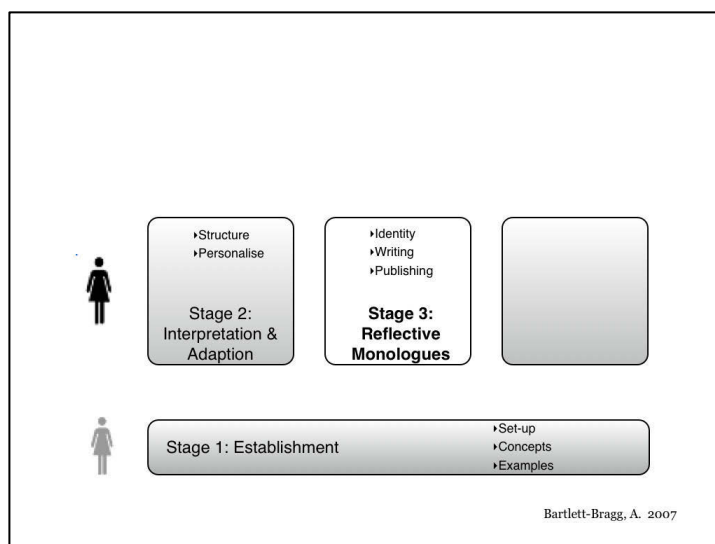
Figure 3.6: Stage 3: Reflective Monologues

Objective

The objective of Stage 3 is creating an online persona through the personalised writing and publishing of the learners' work, while encouraging the development of reflective writing, leading to further development of metacognitive and critical thinking skills.

Pedagogical approach

The core concept of this stage is to further encourage the development of a personal publishing persona, a core element in social network theory (Bryant 2003; Rheingold 2002). Activities at this stage include further personalising of the software applications by creating personal profiles, reflective writing activities generally based on guiding questions from topics being studied (Boud, Keogh & Walker 1985), and the issues of publishing publicly.

Although the learners' levels of technical capabilities are still an issue present at this stage, it has become less of a concern. The dominant issues arising are focused on creating an online persona and writing publicly, without a high level of awareness of readership. The posts tend to represent more of an internal dialogue than a written piece intended to engage an audience of readers.

At this stage, it is imperative the educator moves into a Mode 3 (Baumgartner 2004) approach that supports and guides the learner, without prescribing formulas about how activities should be completed. Any Mode 1 or Mode 2 (Baumgartner 2004) responses will undermine the learners' ability to develop their own identity, self-confidence in writing, and personal learning management strategies, as they become more self-directed, independent learners.

Activities in stage 3

- Understanding their readers
  Activities that require application of previously examined weblogs, identifying who their weblog readers may be, and how to engage their interest through the content they publish.

- Representing themselves
  Developing an 'About Me' page – how to create credibility and authority to support their published posts by writing biographies. Time was spent ensuring

each person was aware of publicly sharing personal information, while maintaining some degree of privacy.

- Naming their weblog

  A review is conducted of weblog names and how this may influence their readers' attitude towards the published content.

- Ethical publishing

  Responsible public publishing required knowledge of referenced, informed content, which would also enhance credibility and authority of posts. References were provided to the Australian Journalists' Association Code of Ethics (Media, Entertainment & Arts Alliance 2005) and several other resources, including a proposed code of ethics for bloggers produced by the French Foreign Affairs Department, 'Cyberdissidents – A Bloggers Handbook' (Reporters San Frontiers 2005). Each learner was required to write and publish their own code of ethics for their weblog.

- Finding a voice

  Further examples and guidelines were provided as models for styles of writing using weblogs, highlighting subtle differences in style between formal academic essay writing, shorter academic weblog posts, through to informal snippets that may include links to references of interest.

Fifteen minutes of classroom time was dedicated to writing activities. However, rather than structured questions, suggested topics for consideration are used with the intention of allowing the learners to take more responsibility for their own research and posts, utilising Baumgartner's (2004) Mode 3 style of teaching.

3.9 Stage 4: Reflective Dialogues
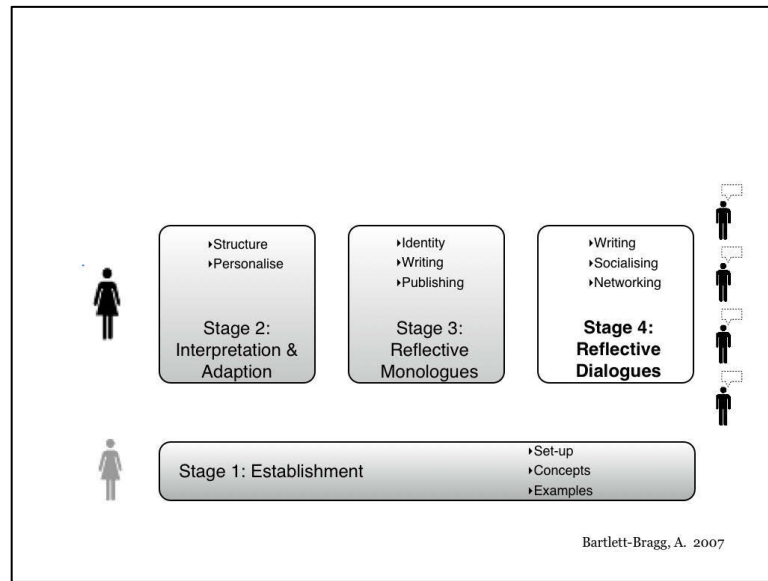
Figure 3.7: Stage 4: Reflective Dialogues

Objective

The objective of stage 4 is to progress confidence in writing and publishing publicly, while extending the online conversations towards developing a network.

Pedagogical approach

The core concept of this stage is to further develop learners' public writing skills including critical thinking (Brookfield 1987) and extend the use of hyperlinks to other online content to support their arguments. In addition, this style of writing encourages socialisation and networking through the use of notification technologies to original authors. By this stage learners should have developed a level of comfort with their writing, managing and publishing activities, and the focus can now facilitate the development of a network through the interaction with others. Activities that promote the reading and commenting of contributions, either within the cohort or beyond the constraints of the course, support the development of network participation (Rheingold 2002; Wenger 1998).

The approach to social software, collaboration, and interaction between internal learners and potentially external networks can inhibit the learners' willingness to participate and share their thoughts and ideas publicly. The learner's self-efficacy (Bandura 1977a, 1997) can impact these activities; however, support from MKOs (Vygotsky 1978) and

the use of symbolic modelling (Bandura 1977b, 1986) is designed to manage those who may feel inclined to disengage.

Learners may exhibit a level of assurance in self-reflective writing tasks, perhaps in restricted areas of the selected software; however, when encouraged to collaborate with others, their level of self-confidence – particularly in relation to their writing capabilities – becomes a major concern and will influence how actively they seek to engage in the processes. The support strategies outlined above, in particular the role of the MKO (Vygotsky 1978), is a valuable method to manage these issues.

Ongoing Mode 3 (Baumgartner 2004) strategies such as participation in the development of networks provides a model for the learners with the effect of supporting the processes, but not prescribing the method that could be interpreted as a Mode 2 or Mode 1 strategy.

Further encouragement towards a deeper reflective process requires the students to consider their style of expression, intended audience and publication of their thoughts.

No classroom time is allocated for blogging; however, each class discusses topics and issues that could be incorporated into their weblogs. An intentional push towards self-directed publishing is made and responsibility for the contents is moved to the student.

The trend towards self-direction and responsibility is not a comfortable shift and may result in abstinence (Bandura & Jourden 1991). Further encouragement and time spent at Stage 3 may resolve this issue.

Students that reach this stage acquire a 'voice' or style of writing in the new genre that moves away from surface level reporting (Marton & Booth 1997) to personal knowledge publishing that exhibits a more considered writing style. Some students develop journalistic qualities in the reporting and opinions on their learning events and experiences. Some students may now use quotes from their blogs in written assessment tasks and report enthusiastically about seeing their own name in the References – as a published work with an official URL. The students' blogs construct a type of learning conversation or dialogue.

Activities in stage 4:

- Reflective and critical thinking writing tasks

  Subject-related topics are provided; however, student is given freedom to explore and present materials.

  Guidelines for writing critically and examples are provided.

- Developing networks

  Activities to illustrate network structures, including examples such as Baran's (1964) distributed communication networks (refer Figure 4.1).

  Exploring and reading other weblogs (external and internal).

  Making comments on identified weblogs of interest.

3.10 Stage 5: Distributed knowledge artefacts
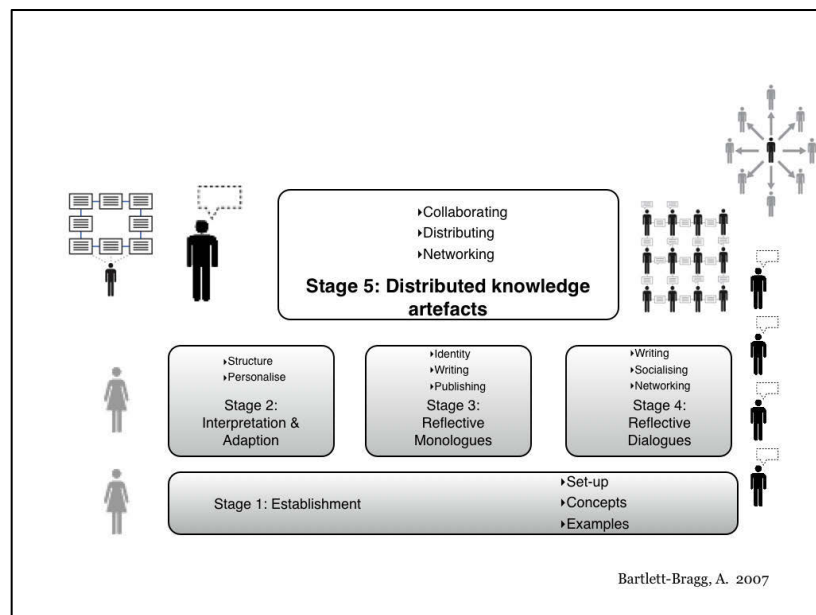
Figure 3.8: Stage 5: Distributed knowledge artefacts

Objective

The objective of stage 5 is to encourage active participation and establishment of a network through the process of writing to intentionally engage in dialogue, collaborating, and sharing with others.

Pedagogical approach:

The core concept of this stage is to facilitate active participation in social networking and contributions, which are distributed with the intention to engage in interaction with others. The learners require limited activity direction at this stage, as they further collaborate and contribute within their own networks. The writing activities can guide the learners to arrive at a collective reflection attitude which will often result in the learners becoming models for practice for other cohorts, either within the subject or externally within broader networks. Combinations of Bandura's (1977b) symbolic modelling and self-efficacy (Bandura 1977a, 1997) have a positive effect on learner behaviours at this stage. The role of the MKO (Vygotsky 1978) becomes less conditional on achievement of activities as learners establish self-directed, autonomous behaviours.

Technical capabilities and other issues previously restricting participation have generally been addressed and are no longer dominating the learning processes. As the learners typically manage their networks with a degree of confidence, there can be a lack of engagement and commitment if they are aware that the processes will not extend beyond the timeframes of the subject.

Participatory behaviours (Lave & Wenger 1991; Wenger 1998) are central to the learners continuing to engage with network members. Students move from personal knowledge publishing to reflecting on the knowledge learned and providing guidance to readers, who may use the knowledge to enhance their own experience and learning as knowledge artefacts.

The students are now aware of the broad reach of their weblogs, not only as authors but also as readers. Their writing can be strongly opinionated; however, it may also display critical thinking (Brookfield 1987) and deep reflective qualities of learning (Marton & Booth 1997).

The educator continues in Baumgartner's (2004) Mode 3, providing guidance and feedback while transitioning to a role that could be viewed as a co-participant in the learner's network. There is a risk of reverting to a Mode 2 or even Mode 1, as learners require final assessment support. This can be avoided if the role of MKOs (Vygotsky 1978), in particular peers, can share their approach and offer encouragement to others.

Activities in stage 5:

- Information organisation

  At this stage, a review of personal information is encouraged as learners' work is prepared for assessment tasks. This can include revisiting the structural aspects such as categories.

- Writing and reflecting

  Very little guidance is provided on written tasks in this stage. Learners are encouraged to continue producing content in a self-directed manner.

- Writing to engage

  Intentional posts that are either in response to another person's weblog post, using trackbacks to notify original author, or producing content that has been identified as interesting to their developing network of connections.

- Extending and maintaining network connections

  Reviewing the weak ties (Granovetter 1983) within their connections with the intention of extending their network.

  Maintaining existing connections through comments on weblog posts and sharing relevant resources.

3.11 Assessment strategies

The correlations between the stages within the 5-Stage pedagogical framework were overlaid with Baumgartner's Modes of Teaching (2004), and Boud & Falchikov's (2007) scheme for developing informed judgement. The associated assessment strategies were based on authentic production of content and evidence of learning task completion. All activities were posted to their weblogs, both the weekly learning activities and essay style submissions.

3.12 Part 2 Summary

Part 2 of this chapter outlined the 5SPF by providing an explanation of each stage of the framework, including the objectives, pedagogical approach and related theories, and an overview of the learning activities.

The framework has informed the design of this research project and by reviewing each stage in respect of what actions the learners were performing, I was able to identify what data was available for collection. To achieve an understanding of the learners' experiences, the complexity of the online environment and the nature of interactions were able to be determined through the insights gained at each stage of the framework.

The research methodology and design of the approach used in this study is outlined in Chapter Four, where the data types and methods for collection are highlighted. In Chapter Five, Part 1, the first iteration of data analysis will report the findings against each stage of the framework, and form a basis for developing the phenomenographic categories of description that identify the pedagogically critical aspects and variation in the learners' experiences.

The framework has provided a pedagogical approach for introducing social software in adult education settings, but also is the keystone to the research design and provided a rich source of data to address the research questions.

3.13 Conclusion

This chapter has traced the development of thinking, that included the four years prior to the commencement of this study, where I was engaged in a process of critical reflection on the potential opportunities afforded by the introduction of social software into the adult learning environment. While Chapter Two provided the contextual background of weblogs in education at the time of the study, this chapter has detailed the theoretical perspectives and their influence on the development of a pedagogical approach used in the design of this study.

The objective was to outline this process through the engagement with other practitioners and researchers who provided valuable feedback to shape my thinking.

Concurrently, a review of theoretical perspectives available at the time further informed the pedagogical approach taken in this study and resulted in the development of a pedagogical framework, the 5SPF.

In Part 1, the theoretical and pedagogical influences on the research design, including the early versions of a pedagogical framework, highlighted the aspects of key literature and online teaching models that both informed and identified gaps in the existing body of knowledge.

The social learning theories, predominantly impacting the design of a pedagogical framework through the application of Bandura (1977b, 1986), Vygotsky (1978), and Lave and Wenger (1991), were transposed into the online social software context, where these combined approaches, together with knowledge available about social network theory, shaped the final version of the 5SPF.

Part 2 detailed the design of 5SPF by outlining the objectives, pedagogical approach and learning activities for each stage of the framework. This amount of detail establishes the key role of the 5SPF in the research design and provides an understanding for the data types and collection methods that are described in Chapter Four.

In the next chapter, Chapter Four, the research design and methodological approach will be described and the relationship to the 5SPF as a key component for data sources and collection methods that enabled the research questions to be answered. The method of phenomenographic analysis will further demonstrate the relationship and value of the 5SPF to identify the learners' experiences of self-publishing and highlight the pedagogically critical aspects through the development of categories of description.

Chapter Four

Research Methodology and Design

4.0 Introduction

This chapter describes in detail the research perspectives and methodologies applied to the project and also provides a full explication of the challenges encountered within the context of an emerging research field of educational web-based technologies and pedagogical practices.

The chapter commences by restating the research aims and questions and then proceeds to develop a rationale for the development of the methodological framework. This includes a review of qualitative approaches to internet research at the time of the study, and consideration of the appropriateness of the blended use of the interpretive, phenomenographic, and quantitative approaches.

The chapter examines the application of the research methods framework within the design of the project, providing a detailed account of the role of the researcher, the profiles of research participants, the data types and collection methods, and analysis process. The chapter concludes with the contextual influences and considerations relating to the ethics and practicability of the research study.

4.1 Revisiting the research aims

As outlined above in Chapter One, Section 1.3.1, the aims of this study were to understand the learners' collective experience of self-publishing with weblogs and their experience of developing and learning in a distributed learning network (DLN).

In order to achieve the aims of this study, it was critical that the methodological approaches acknowledged the experiences of the learners as a group, and allowed the perspectives of learners to be foregrounded while they developed DLNs through the application of the 5-Stage pedagogical framework (5SPF), as described in Chapter Three, Part 2.

The research questions developed and outlined in Chapter One, Section 1.3.1, guided the rationale for the selection of the research methods and enabled the identification of data types and collection methods to focus on the collective, group experience.

Some of the challenges encountered in the selection of research methods that addressed internet-based inquiry will be highlighted, including the limited available literature and the reconceptualising of existing approaches and exploring how to reshape traditional methods to the online social software environment.

As the location of the learners' experiences to be investigated was predominantly focused on their weblogs, this resulted in the need to determine a valid, multi-faceted method to incorporate the online social experience and interconnected relationships between learners and technology. Section 4.2 in this chapter will discuss the rationale for the research design and provide justification for the subsequent selection of a methodological framework.

4.2 Rationale for research design

This section will describe the logic and conceptualisations that underpinned the development of the elements of the methodological framework and the logic of their relationship to each other.

Determining the research design was one of the most challenging, yet rewarding aspects of the project. Research design for the internet or web-based studies was relatively underdeveloped at the time this project was conducted (Booth 2008; Hooley et al. 2012; Larsson & Hrastinski 2011; Markham & Baym 2009) and arguably, this remains the case today. A proliferation of novel practices and methods were evolving as inter-disciplinary fields attempted to adapt existing qualitative and quantitative approaches; however, representation in research methods literature tended to address the technology as a tool or instrument for gaining efficiencies rather than as focus or location of the research study (Murthy 2008).

The limited number of substantial, systematic research studies in the field of weblogs and the use of the internet, particularly in the education field at the time this study was undertaken, had resulted in attempts to transfer and adapt research methodologies

designed for physical environments into the virtuality of online environments. Further discussion in Section 4.2.1, Qualitative internet inquiry, will expand on these issues, relating specifically to qualitative research methodology, and provide the context for discussion related to this project.

A literature review of research methodologies for published weblog research was conducted by Larsson and Hrastinski (2011) spanning a period from 2002 – 2008. A striking 62 per cent of studies used quantitative methods, predominantly content analysis, network analysis, and other forms of data analysis. In contrast, only 28.3 per cent used qualitative methods, principally using techniques based on textual analysis. Only 9.7 per cent of studies used a mixed methodological approach. In the mixed methods studies, the blend of approaches was used primarily to reveal different aspects of the data, providing an opportunity to validate findings from more than one data source.

Of significance in the review conducted by Larsson and Hrastinski (2011), published research articles ranged from two in 2002, to 26 in 2005, with only one in 2005 having an education theme, substantiating the limited extent of previous research studies and methods to inform the selection of methods for this project, or provide guidelines for their selection.

In focusing the consideration of methods on the intention of the study, to investigate the adult learners' experiences, it was important to develop a methodology that fore-grounded the learners conceptualising the group as a collective set of experiences, rather than investigating the individual's actions and dispositions. The priority for the research was acknowledging that the research problem was about taking into account the practices of pedagogy and learning through a technological interface, not a research study that focused specifically on the use of technology.

Furthermore, as the researcher was also the subject lecturer, selecting methods of research that acknowledged but limited the influence of the researcher on the outcomes through the design of the methodological framework was taken into account. The relationship and impact of the researcher to the study will be expanded upon in Sections 4.3.1 and 4.6.1.

The core elements that were considered in the selection of the research approach(es) needed to address:

- The learners' experiences, as a group;

- The location of the researcher, as the subject lecturer; and

- The context of the learners' experiences being located in more than one setting – both in a classroom and predominantly on the internet.

Whereas the majority of research into weblogs and the internet had applied quantitative methods (Larsson & Hrastinski 2011), this approach was considered insufficient because it did not allow for appropriate consideration of the social context in which the research participants' learning and experiences were taking place. The data and outcomes being sought required more insight into their experiences and understanding of the additional influences and subsequent impact of those experiences in the context of both a contained classroom experience and the extended social setting of the internet, making the qualitative approach more appropriate (Jones 2004; Maxwell 2005).

A single methodological approach was considered to have limitations in both the depth of understanding the learners' experiences and the complexity of the learning context, regardless of different sources of data. Consequently, the synthesis of methodological approaches was considered necessary to address the limitations associated with the selection of a blended approach that provides between-method triangulation (Denzin, 1970), where contrasting research methods are applied to enhance confidence in the results. The selection of a mixed methodology, as noted by Larsson and Hrastinski (2011), was a strategic step towards ensuring a level of rigour was applied to tackle the complexity of the research context and a requirement for capturing aspects of the analysis of data and the reporting of outcomes that may be lost in exclusively quantitative outcomes.

Following careful consideration of the characteristics of the research context and a wide range of examples from the literature, a methodological framework was developed, situated in the qualitative paradigm, and based on a blend of phenomenographic and interpretive methodologies. This framework needed to be appropriate to the questions, and the data sets that were needed to address these questions. The quantitative element

in the design related to data from student feedback surveys that were used with the intention of validating certain aspects of the qualitative data.

As a result, the research perspective for the project was underpinned by the interpretive assumption that reality is developed through social constructions such as language, consciousness, and shared meanings, where the studies attempt to understand the phenomena being researched through the meanings assigned by the participants. The phenomenographic methodology and analysis process then extended the interpretive stance by incorporating the mapping of the qualitative data into categories of description that outlines the variation in the ways a group of people experience and understand various aspects of a phenomenon in their specific learning context, while the qualitative results from the student feedback surveys provided a form of validation against the claimed experiences of the group as a whole.

From the perspective of a researcher in an emerging field of inquiry, I believe that the research design and methods applied to this study provide a significant contribution to researchers engaged in the internet-based inquiry community and will provide potential to further inform the development of robust methods for future qualitative research conducted in the multiple settings, both physical – in person – and on the internet.

The following Sections, 4.2.1, Qualitative internet inquiry, and 4.2.2, Phenomenography, will outline in detail the reasoning behind the choices that under-pinned the methodological framework and the development of the research design described in Section 4.3, including the data types and collection methods in Section 4.4, and the data analysis process outlined in Section 4.5.

4.2.1 Qualitative internet inquiry

Educational technology research, particularly internet-based technologies, was and still is considered a relatively immature field of practice (Anderson & Kanuka 2003; Conole & Dyke 2003; Conole, Oliver, Isroff & Ravenscroft 2004; Mann & Stewart 2000; Markham & Baym 2009; Murthy 2008). Weller (2011) goes further in describing current research practices with new technologies as one of 'cautious experimentation'

where values and attitudes within research communities are conservative and new technologies and approaches are only being used if they complement existing practices.

Predominantly, other qualitative research projects in educational technology settings have focused on attempting to produce results that measured uptake, effects of new technology on learning (compared to traditional methods) with many studies based on asynchronous discussion forums, or the use of other eLearning technologies, for example LMS and multimedia online courses, indicating student outcomes of statistically insignificant difference with little regard accompanying pedagogical strategies (Friesen, 2009). Many studies were small projects, using case study methodology or were based upon anecdotal evidence, not at doctoral level, and had used a combined qualitative and quantitative methodology (Bliuc, Goodyear & Ellis 2007). At the time this project was designed, the study of weblogs in education (Larsson & Hrastinski 2011) had focused on the reporting of practice, with observations and conclusions drawn from the educators' experiences. Quantitative statistical analysis that reviewed the adoption of weblogs within the classroom setting, the number of posts during a subject, and the reporting of basic survey questions which asked participants if they liked the process or not, had been popular case study based methodologies.

Internet research studies that focused on qualitative inquiry had been compelled to review and challenge core principles and practices (Markam & Baym 2009), taking into consideration the constant shifts in societal internet usage contexts, but also the inter-disciplinary fields of research that cross pathways in any internet related research study.

At the time the research study was conducted, the dominance of quantitative approaches was underpinned by a dominant orthodoxy that considered multi-method approaches to internet inquiry as incompatible paradigms of research (Jones 2004). Concurrently, advocates of traditional approaches were asserting that to achieve deeper meaning and to preserve context, face-to-face interactions were an essential component of any research project (Patton 2002; Santos & LeBaron 2006).

Justifying the selection of a combined approach to include qualitative techniques, while ensuring a rigorous research design, does require a re-examination of the basic principles of a qualitative study in which the researcher is required to become involved in the field with the participants, a field where the participants live, work or study. In

these situations the research is providing a context for understanding the dispositions and actions of a group of people (Creswell 2007; Patton 2002; Scott 1996).

Applying these principles to this study, situated both on the internet and in the classroom, required systematic consideration of the characteristics of qualitative research. In this study, characteristics of qualitative research, as described by Creswell (2007), were represented in the following manner:

- Research is located in the 'natural setting' for participants:
  The setting for the research project, where data was both produced and collected, crossed multiple natural settings initially in the classroom, where research participants met face-to-face at regular intervals (see Section 4.3.2, Research participants for specific details), and subsequently on the internet where research participants contributed to and submitted their learning tasks for both the subject and as the source of data for the research project.

- As the key instrument, the researcher collects all the data directly from the participants, rather than relying on questionnaires or survey responses:
  As the researcher was also the subject lecturer, all participant actions were directly connected through the researcher in both online and offline interactions as the key instrument for data collection.

  The contextual influences related to this dual role are discussed further in Section 4.3.1, The researcher.

- Multiple sources of data are collected to ensure validity, and typically these include interviews, observations, and documents:
  Six types of data from different sources were used in this research project; these included written responses to questions, diagrammatical representations, student feedback results, and the researcher's observation field notes. A detailed description of data types and collection methods is outlined in Section 4.4, Data types and collection methods, of this chapter.

- Inductive analysis works back and forth across the data to develop themes or categories:
  The data analysis process is described in Section 4.5 and included an inter-

pretative analysis for some types of data, while a phenomenographic approach and quantitative analysis was included in the design to provide additional rigour through data triangulation.

- Focus is on the participants' perspective, their meanings, their subjective views: The participants' experiences were central to the project design; however, not as individuals, but as a collective – hence the selection of the phenomenographic approach for data analysis. See Section 4.2.2, Phenomenography. for further description of this approach.

- The researcher reflects on their role, the role of the reader, and the role of the participants:

  The role of the researcher was another critical design consideration of this project. The foregrounding of the researcher, participant relationship and the potential impact on the results required deliberate strategies and actions to minimise the influence of the researcher. This is further discussed in Section 4.3.1, The researcher.

- A holistic view of the social phenomena being studied is taken:
  The multi-faceted location of the research participants and their interactions required a holistic perspective that addressed these dimensions both in the production and collection of data, but also in the analysis of data. These aspects are further discussed in Sections 4.4, Data types and collection methods, and 4.5, Data analysis.

The application of qualitative principles outlined above demonstrate that the adaption of the design to include internet-based research contexts can be achieved where a critical awareness of the challenges are addressed in an original, yet rigorous methodology.

4.2.2 Phenomenography

As outlined in Section 4.2, Rationale for research design, the phenomenographic approach for data collection and analysis were incorporated in the blended methodology to understand the qualitative variation in the experiences of the learners.

The selection of this approach was primarily focused on the alignment to the research aims as outlined in Section 4.1 of this chapter.

One of the core epistemological assumptions underpinning phenomenography is the relational view of the world from a non-dualist stance (Akerlind 2005a). The focus of the research is not on the cognitive structures and the separation between an inner and outer world, it is the constituted internal relation between them, where '…there is only one world, but it is a world we experience, a world in which we live, a world that is ours' (Marton & Booth 1997, p. 13), i.e. where the research object is not the phenomenon being studied, but rather the relation between the research subjects and that phenomenon (Bowden 2000). As stated in Section 4.2, Rationale for research design, one of the principal features in this study was the focus on the collective experience of the learners to determine the variations of these experiences, as a group. The categories of description and outcome space would provide the researcher with the ability to investigate the collective experience through the application of the 5SPF and subsequently make recommendations based on the pedagogical factors for successful integration of social software into the learning context.

The aim of a phenomenographic approach was to describe the qualitatively different ways of experiencing phenomena, or the variations in participants' experiences, where results are considered as a collective whole and individuals are only fragments of the data to be analysed (Booth 2008; Jones 2004).

The primary method for collecting data in a phenomenographic study has been the structured interview where each participant is asked the same set of questions. However, other sources of data have been acknowledged as staying true to this process and Mann and Stewart (2000) have noted that the internet form of writing is a hybrid form of language lying between the spoken and written styles of communication. The data collected for this research project has used structured questions (such as an interview) and the participants responded by posting to their weblogs; further description is detailed in Section 4.4.1, Participants' written response.

Criticisms and debates regarding the validity and reliability of phenomenographic research methods are not new to qualitative researchers. Phenomenographic researchers have rationalised the challenges to method by primarily relating this to the lack of

published works that discuss the nature of variation, the methods employed to collect data, and the data analysis process (Francis 1996; Webb 1997).

Phenomenographers would refute these assertions through the claim that the collected data, from a qualitative perspective, is context specific and that it leads to an outcome instrument (described below in Section 4.2.2.1, Outcomes of phenomenographic research) that provides quantitative study results that are reliable enough to develop a generalised approach over different contexts (Jones 2004; Prosser & Trigwell 1999).

Yet, validity and reliability are central issues for consideration by qualitative researchers, including phenomenographic researchers, with the need to demonstrate how results can be viewed as objective to attend to positivist criticisms (Akerlind 2005b; Kvale 1996). To address validity concerns, in phenomenographic terms and in this research study specifically, there are two types of validity checks that were applied: communicative and pragmatic, as described by Kvale (1996).

- **Communicative validity checks**

  Fundamentally, this relates to the ability of the researcher to present a persuasive argument to support their interpretation of the data (Akerlind 2005c; Kvale 1996; Marton & Booth 1997). To achieve recognition and validation from within the research community, typical approaches have been to present and receive feedback at research conferences, and publish in peer-reviewed journals.

  During this research project, the researcher has participated in several research community and field of practice conferences where the methodological approach and early findings were presented. Peer feedback from these presentations identified areas that required further validation or clarification of methods. In addition, these presentations were converted into peer-reviewed chapters in research textbook publications (Bartlett-Bragg 2005, 2007, 2008b). An extension to communicative validity checks has been to seek feedback from a wider audience, beyond the formal peer-review process, through publishing work-in-progress to the researcher's personal weblog. Both the researcher and fellow research community colleagues have utilised this form of broader public feedback cycle. This more open feedback strategy is not without its challenges, see Section 4.6.1, Social issues: the researcher, where an incident of the

researcher's early findings was presented by another academic at a conference, without attribution.

- **Pragmatic validity checks**

  Contributing to the body of knowledge within a field of practice is central to research aims and objectives, not only from the perspective of the researcher, but also the intended audience of the research (Akerlind 2005c; Kvale 1996; Sandberg 1997). While it could be argued that a validity check of this nature could also be achieved by communicative validity checks, it is the direct intention to contribute research that is useful and provides insights into practice or further research studies, whereas the communicative validity is more directly associated with the discussion of validity related to methodological approaches.

  Presenting the research work-in-progress at peer-reviewed conferences and in discussions within face-to-face and online spaces to ensure the pragmatic validity of the study, the researcher also presented at professional development sessions involving a wide-ranging selection of educators in different sectors, from schools, to vocational colleges, to higher education institutions, and organisational professionals (Appendix 1, List of conference presentations). These provided a test of the generalisability of the methods emerging from this study and have provided anecdotal feedback that focused on valuable points and highlighted the potential for broader application of research methods.

4.2.2.1 Outcomes of phenomenographic research

The emerging themes from the data analysis in phenomenography are called 'outcome spaces' which are represented by a number of 'categories of description' or ways of experiencing the phenomenon and generally include a structural relationship linking the different categories. The structural relationship is typically associated with a hierarchal link to the differing approaches of the learners to the ways of experiencing the phenomenon (Marton & Booth 1997).

The outcome space signifies the collective experience of the research participants and how the phenomenon being studied is experienced differently, by different people, in relation to their context. The emphasis is a range of meanings and perceptions as a

group, not a range of meanings for an individual within the group. This approach is particularly significant for analysing the experiences of the DLNs by acknowledging the collective and distributed experience of the many, not the individual.

Marton and Booth (1997) state three criteria for determining quality categories of description:

1. That each category conveys something distinct about a way of experiencing the phenomenon;

2. That the categories are logically and structurally related, frequently in a hierarchical manner; and

3. That the categories are prudent, that is, as few categories as is reasonable are used to represent the critical aspects of variation in the data.

Inevitably, there is a tension between the researcher's perspective of the phenomenon and the interpretation of the data as categories of description are initially developed (Bowden 2005; Webb 1997). Akerlind (2005b) describes the need for the researcher to remain open-minded while trying to minimise any predetermined views, and to maintain a focus on the data as a whole rather than an individual transcript by being willing to reflect upon any new perspectives that may be emerging. Additionally, by providing a detailed description of the analysis steps and supporting examples that illustrate the category descriptor, the researcher is highlighting their interpretation and theoretical understandings. As the lecturer and researcher in the study, my role was inextricably embedded in the process. The influence of my role cannot be fully determined, but is acknowledged in the evaluation of data and subsequent conclusions drawn from the results. See Section 4.3.1 in this chapter for further discussion.

It was intended that the resulting categories and identification of critical educational aspects would provide a framework for future application of social software by other educators and learning practitioners, while enabling refinement of the 5-Stage pedagogical framework used in this study.

This section has described the rationale behind the selection of the methodological framework applied to the research project and the considerations that identified the strengths and weaknesses of each approach. In summary, the resulting methodological

framework comprised the following blend of elements from both qualitative and quantitative approaches:

- Interpretative approach: used to understand the meanings assigned to experiences by the participants;

- Phenomenographic approach: to map the qualitative data into categories of description, based on the collective or group as a whole and to develop the outcome space from the emerging themes in the data; and

- Quantitative approach: student feedback survey results to provide validation against comments related to the experiences expressed by the group as a whole.

4.3 Research design

This section will describe how the methodological framework, detailed in Section 4.2, was applied to the research context. In particular, this section will provide insight into the contextual relationship between the researcher and the research participants, while presenting details of the research participants, and the recruitment process. A brief review of how the 5SPF was positioned in the methodological framework relates to how the research design was embedded in the research participants' engagement in subject activities.

4.3.1 The researcher

The contextual influences and considerations relating to the social perspective of the researcher necessitated the role of the researcher to be examined and the impact of the relationship to the research students addressed within the design methodologies. The ethical considerations needed to reflect the identified issues and provide strategies to manage and mitigate these issues, should they arise, are discussed in Section 4.6.1.

As the researcher, my location in the research required the separation of my role as researcher with the primary task of designing the study, collecting the data, and

analysing the data, to that of the educator where the relationship with the research participants was acknowledged in the context of the lecturer-student setting.

In the duality of the relationships, the axiological assumptions or the explicit values a researcher brings with them evolve from the understanding of what the researcher brings to the study:

- **Previous knowledge**

    Both my professional and personal interest in blogging from as early as 2000, five years prior to the data collection phase of the study, provided a foundational base on which to frame the research aims and objectives.

    As a lecturer at the University, I had taught the subjects used in the research project for two years prior to the study, which had informed the development of the 5-Stage pedagogical framework used in this study. This previous work enabled me to enter the study with confidence in the content that would not distract me from maintaining a focus on the study.

- **Experience as a practitioner**

    In addition to previous experience in the particular subjects in which the study was located, as an educator in both the university and organisational settings, I brought over a decade of practical classroom and online learning management strategies. This enabled me to anticipate and prepare strategies to address pedagogical issues highlighted to the ethics committee in the design of the research methodologies.

    My experience as a practitioner equipped me with the objectivity to provide guidance to research participants as learners, but also the experience not to interfere in the learning process or the research design.

- **Subject matter expertise**

    I had been researching the development of new and emerging social software technologies since 2000 and was an active member of international research communities, presenting at conferences and writing in peer reviewed publications (Bartlett-Bragg 2003a, 2003b, 2003c, 2005; Farmer & Bartlett-Bragg 2005) regarding my early observations and anecdotal case studies of social software's

impact on learners' behaviour. This participation led me to research conferences in Europe, in particular BlogTalk 2003 and BlogTalk 2004 that resulted in my convening BlogTalk 2005 in Australia. I believe that without participation in these communities of research, both online and offline, I would not have been adequately equipped to manage the design and implementation of the research methodologies for this study.

- **Subject lecturer and subject author**

  My role as both the subject lecturer and subject author cannot be disregarded when considering the design of the research study. The design required deliberate strategies and actions to neutralise both my influence over the research participants and minimise any effects that could be attributed to the results through lecturer intervention, beyond the actions expected of a typical subject lecturer. The strategies deployed to manage the relationship with students is detailed in the next section, Section 4.3.2, Research participants, where the explicit actions are outlined.

- **Researcher**

  The importance of my role as a contributor to the study was played out through an interaction between the key instrument for data collection, observing, recording insights, and collecting, while applying my experience as an educator and subject matter expert to provide an informed appreciation of the learners' experiences.

Recognising that the researcher in an interpretive study can never be fully detached from the research setting, it is imperative to accept that the analysis of data and subsequent conclusions will be based on the historical and socially informed experiences of the researcher.

4.3.2 Research participants

The participants in the research study were drawn from students enrolled in two undergraduate degrees at an Australian university in the Faculty of Education, while

another group were corporate workplace trainers enrolled in a vocational qualification at the same university for the autumn semester in 2005.

All students and short course participants were invited to participate in the research study on a voluntary basis. The completed weblogs of those participants who agreed to participate in the research were analysed after the subjects were completed and results had been determined, using previously discussed interpretive, phenomenographic, and qualitative methods, to discover the groups' common experiences and perceptions, in an attempt to gather a collective understanding of both the process of learning and the outcome of using weblogs to develop DLNs.

Sixty participants, dispersed across the groups described below in Table 4.1, consented to be part of the research study. This number represented approximately two thirds of the possible total number of enrolled students.

The participants' profiles have been divided into four groups, based on the subjects they were enrolled in at the time the data collection took place.

Table 4.1 Research participants

	Group 1	**Group 2**	**Group 3**	**Group 4**
Course	Undergraduate degree: 2nd year students	Undergraduate degree: Elective subject taken in 2nd or 3rd year	Undergraduate degree: 3rd year students	Diploma level, vocational qualification
Age	School leavers: 20-25 years	Mid 20s-40 years	School leavers: 20-25 years	20 – 55 years
Gender	Predominantly female	Predominantly female	Predominantly female	Equally mixed
Subject	eLearning subject: first of four core eLearning subjects	eLearning subject: an elective	eLearning subject: third of four core eLearning subjects	eLearning module: six units of competence
Attendance	Weekly 3 hour classes for 13 week semester	Block 3 x7 hour sessions on Saturdays over 13 week semester	Weekly 3 hour classes for 13week semester	5 x 1 day classroom sessions over 4 months, with online asynchronous participation between sessions
Assessment	All required tasks were published on their weblogs	All required tasks were published on their weblogs	All required tasks were published on their weblogs	Not compulsory – some tasks were presented on weblogs
Work Experiences	Little or no experience in the organisational learning field	More than 5 years experience in training and development roles	Little or no experience in the organisational learning field	Varied – all had current roles as front line organisational learning professionals

To ensure students did not feel obliged or compromised to participate in the research, a statement in the Subject Outline document (see Appendix 2) was included and discussed in the first class of each subject. Additionally, a statement was included with the Consent Forms (see Appendix 3) in an Information Letter (see Appendix 4) that clearly outlined a procedure for students to follow if they had any concerns. The Consent Forms were independently collected and held by the Course Co-ordinator for the duration of the semester and were only made available after students' results had been submitted. As the subject lecturer, throughout the semester and duration of the subjects, the researcher was unaware which students had agreed to participate in the research study. In addition, research participants completing the vocational qualification received written permission from the departmental head for the organisation to allow participation. The same process was then followed, as outlined above, with the consent forms being forwarded by the department head to the Course Co-ordinator.

In addition to the dual role of the researcher/lecturer, in some instances, as their lecturer, there was an existing relationship with research participants. Some students, in Groups 2 – 4, may have studied in previous subjects where the researcher was the lecturer or vocational trainer. The impact of any existing relationship was deliberately considered in the design of the study and any significant impact was addressed by the fact that the researcher/lecturer did not know which students had agreed to participate in the research project and consequently it could not affect the students' performance in the subject or the lecturer/student relationship. Furthermore, participants were able to withdraw their consent at any point throughout the subject by contacting the Course Co-ordinator; again I was not informed if any students had requested to withdraw. The duality of researcher and lecturer has been examined in Section 4.3.1 above.

The design of the study intentionally ensured there was no additional workload or time commitment for the students who participated in the research study as the process under investigation was part of the content of the subjects being completed. In addition, no form of payment or benefit was considered appropriate as the research data was based on tasks within the subject that formed part of their undergraduate degree, or vocational qualification, therefore any form of payment was deemed an inappropriate enticement to participate.

The 5SPF, as described in Chapter Three, Part 2, was followed to develop learning tasks relevant to the subject topics and context of the learners. The subjects being studied required all students to complete learning tasks utilising a weblog as a form of journal for recording and managing their learning, publishing their work and contributing to a distributed learning network, regardless of assessment requirements of the subjects. Section 2.2.2, in Chapter Two, outlined how weblogs were used in this study and a comparison was made to other web-based learning technologies.

Further description addressing the ethical issues for the researcher and research participants is discussed in Section 4.6, Contextual influences and considerations, of this chapter.

The research design outlined in this section has explained how the methodological framework informed the study design, addressing the role of the researcher, and the research participants including the engagement in subject activities that provides an overview of the research context. The next sections, Section 4.4, Data types and collection methods, and Section 4.5, Data analysis, will examine how the research design provided identification and access to the data types, how it was collected, and how it was analysed in terms of the elements within the methodological framework.

4.4 Data types and collection methods

As detailed in Section 4.2, Rationale for research design, taking a predominantly qualitative approach required the consideration of the nature of valid, relevant data types and collection methods. Nonetheless, the selection of data types was, like the selection of methodology, challenged by the nature of internet-based research, where the qualitative collection and analysis of online data was a relatively novel approach.

As the core elements for selection of a qualitative internet-based approach, as outlined in Section 4.2 of this chapter, highlighted, the learners' experiences were principally situated in the online experience of developing their DLNs through the use of their weblogs. Therefore online data, where the experiences were occurring, was considered an important, authentic source for the research study.

Online data, in the context of this research study, refers to actions taken by research participants on their weblogs, which could include text, images, use of bookmarks, hyperlinks to other websites or weblogs, and the personalisation of their weblog in terms of design, layout and structure.

The validity of online data was, and remains, a contentious issue for qualitative internet-based inquiry studies, although the distinction between online and offline data sources is becoming more challenging as current uses of technology integrate seamlessly into everyday lives (Orgad 2009). The question that was examined for this research project related to the difference between data collected in a face-to-face structured interview and the written response to a structured question published on a participant's weblog.

Online data has been analysed in a number of studies (Ferrara et al. 1991; Flick 2009; Mann & Stewart 2000; Murthy 2008; Orgad, 2009) that conclude the nature of the data:

- Appeared to be richer;

- Revealed greater levels of emotion;

- Contained more authentic responses when not led by an interviewer;

- Respondents were more open and willing to share experiences; and

- Respondents' demonstrated a deeper level of reflection than has been recorded through face-to-face interview contexts.

The additional question in this research project related to the validity of relying on data focused entirely upon a research participant's written response, the equivalent of a structured face-to-face interview: Was offline data or additional online data required to adequately address the research questions? Would the written response be sufficient, in and of itself, or would further engagement with the research participant be necessary? In the design of the data collection process, and included in the consent forms, was the option to conduct face-to-face interviews with research participants, to enable further clarification of issues raised. However, as the data presented in the written response was detailed enough, if not richer than could be gathered during an interview, none were conducted. See Chapter 5, Findings, for analysis of written response data.

However, the written response was considered insufficient to address all the issues in the research questions. The complexity of fully investigating the learners' experience required more than espoused comments from the learners in their written responses; instead it required multiple iterations over the research period to determine if their stated experiences related to the visible online actions taken by the learners. For this reason, additional sources of data were deemed essential.

Aside from a methodological argument for the use of online data, there are additional productivity gains for researchers. The participants' written responses, unlike face-to-face interviews, did not have to be transcribed, and data being copied to Word documents.

Although the researcher had access to all learners' weblogs across the four research groups, the responses were not reviewed for the research project until after subject results had been submitted and the Course Co-ordinator provided the consent details of participating students. Only the weblogs of those students who had given consent were reviewed.

Furthermore, it is important to highlight that the participants' weblogs were publicly published websites available on the internet; however, the data used for this research project was de-identified and fictitious names were used for the representation of the data in this thesis. The weblogs were analysed while they were still 'live' on the internet to capture and appreciate the linking and structural development to represent the learners' approach to the task. However, to preserve data and reduce the chance of loss due to any technical issues, copies were transferred to Word documents, including screen shots, and stored on the hard drive of the researcher's computer, backed up on a separate personal hard drive, and hard copies printed out and stored in a locked filing cabinet in the researcher's home office.

Although the weblogs were publicly published on the internet, the participants were allocated fictitious names and a search of the internet will not reveal their weblog by name. Quotes from qualitative data reported on participants' weblogs could be searched for; however, it is highly unlikely that even an advanced search would retrieve an excerpt or comment from a weblog posting made at this time. Consequently, it would be extremely difficult for someone to identify any of the participants from published or

unpublished data and reporting of findings; additionally, by the time the findings are reported, many of the weblogs may have been removed from the internet and will no longer be 'live'.

Outlined below are the six types of data and the collection method, including which type of data related to each of the research questions. No hierarchical value was applied to the different types of data and each research question had intentionally more than a single data type as part of the validity check.

Table 4.2 overviews the connection between the data type and relates it to the each research question, which are restated below:

Research Question 1 (RQ1): How did the participants approach the task of developing a distributed learning network?

Research Question 2 (RQ2): What were the participants' experiences of the process of learning in a network?

Research Question 3 (RQ3): What were the participants' perceptions of the nature of their learning from online self-publishing?

Table 4.2 Data types and research questions

Data Type	RQ #1	RQ #2	RQ #3
1. Participants' written responses	X	X	X
2. Weblog commentary	X	X	-
3. Weblog structure	X	-	-
4. Researcher's field notes	X	X	X
5. Participants' visualisation	-	X	-
6. Student Feedback Surveys	-	-	X

The primary source of data was the student weblogs; however, if the analysis of this data through phenomenographic methods required further clarification, participants in the study had agreed to be included in further interviews and analysis of their work. The focus of the interview questions was to expand on the participants' explanation of their experiences, based on the phenomenographic categories of description identified from the analysis of the data on the weblogs.

No interviews were conducted, as the richness of the data collected from the student weblogs would not have been enhanced by face-to-face interviews.

4.4.1 Participants' written responses

A structured question and written response was used as a replacement for a face-to-face interview. This work was presented as a final reflection of the learning experiences in essay style on the participants' weblogs at the end of each subject. See Appendix 5 for details.

The responses were reviewed online to afford the interactive elements of hyperlinks and the dynamic structure of the weblog to be experienced. Subsequently, the responses were downloaded to Word documents for further data analysis and to ensure no data would be lost if there was a technology failure.

4.4.2 Weblog commentary

Weblog posts written throughout the research period were reviewed for weekly commentary relating to how the research participants approached the tasks as outlined in the 5SPF (see Chapter Three, Part 2).

These posts were collected at the end of the research period by reviewing dated weblog posts that corresponded to the weekly tasks. The commentary as the learners progressed through each stage of the 5SPF was of importance to compare against the final reflection piece. The experiences and emotions of each stage of the framework could be viewed, rather than relying on the final written response to accurately recall all aspects of the learners' journey.

As with the written responses, the weblog commentary was initially reviewed live online, then downloaded to Word documents for further analysis and safe record keeping.

4.4.3 Weblog structure

The structure of each weblog provided insight into the application of tasks in the 5SPF. Features and characteristics that were part of the weekly tasks included personalisation

of the theme and presentation of the weblog, the layout, the use of categories to organise their content and information, use of hyperlinks as either bookmarks to resources, or as a reference to other weblogs of interest, and the structure of the comments function on each post.

At the end of the research period, the weblogs of participants were reviewed as a final representation of structure and the level of application of the features. The initial review was conducted live online to enable the dynamic review of the structure, enabling the click through to content and external resources. Subsequently, screen grabs of the layouts were collected and annotated for further review.

4.4.4 Researcher's field notes

The researcher maintained field notes and observations on a weekly basis related to both classroom contact and online interactions, as each group progressed through the weekly tasks related to the 5SPF. The key behaviours and reactions of each group were noted, the challenges with concepts, any technical difficulties, and feedback comments – positive or negative – were recorded.

Initially, the intention had been to record this on my research weblog; however, as some of the research participants were aware of the weblog's address, it was decided not to share these notes with the groups on the basis that it may have influence on their behaviours in some way. Consequently, notes were recorded in Word documents and not available for review by any research participants.

4.4.5 Participants' visualisation of their network

All students were asked to create a visual representation of their distributed learning network in the final reflection at the end of the semester (see Appendix 5 for final reflection question).

The application of a visual representation was informed initially by Vygotsky's (1978, 1986) concept formation through the use of mediated signs or symbols that become organised as meaning develops. The use of visual thinking or visualisation for

development of mental models through the use of images or symbols can be connected to the Gestalt theories of psychology (Stern & Robinson 1994) where the analysis of relationships helps organise elements of concepts to reveal patterns (Ruch & Zimbardo 1971). The organisation of elements and indicators as to how their network was connected was intended to provide an insight into how the participants perceived their role and how the parts of their network were interdependent and interconnected (Seward Barry 1994).

Applying Bandura's (1977b) abstract modelling strategy, a number of network constructs were reviewed based on Baran's (1964) distributed communication networks (see Figure 4.1 below) and the process of creating a network through each of the structures was discussed in class.
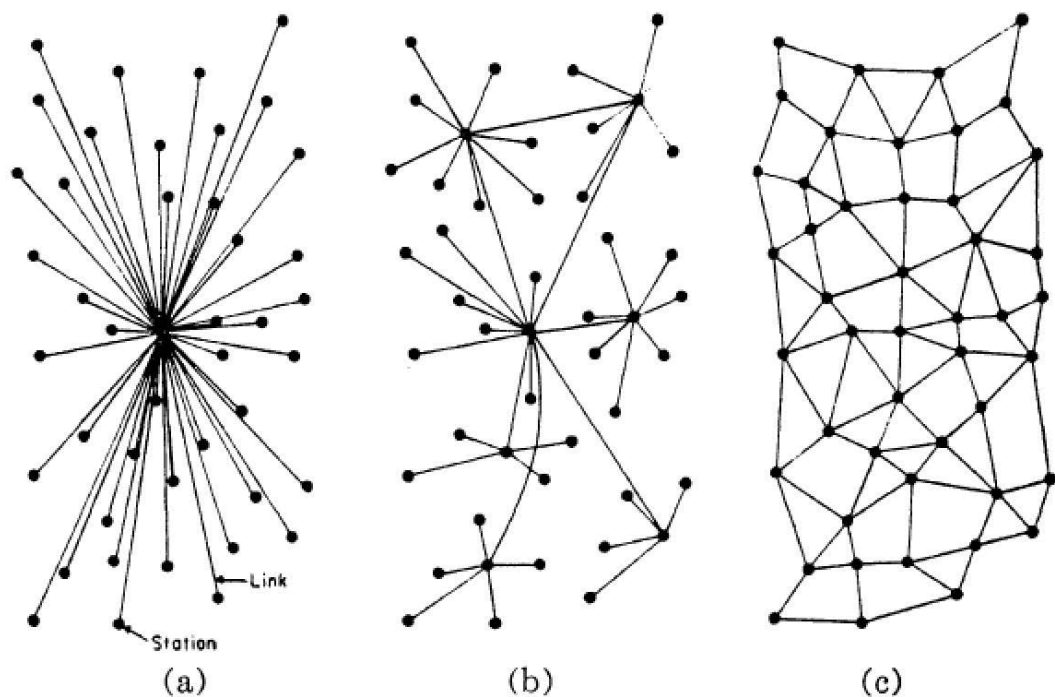
Fig. 1—(a) Centralized. (b) Decentralized. (c) Distributed networks.

Figure 4.1: Baran's (1964) distributed communications networks

The inclusion of visual representations was intended to provide insight into the students' understanding or mental models of their network. The process of using mental models through the illustration of their networks was designed to highlight their level of concept development and how they envisaged the structure of their DLN (Hyerle1996).

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The visualisations were reviewed online and also downloaded to Word documents for further data analysis.

4.4.6 Student Feedback Surveys

The university's teaching and learning centre gathers student feedback across all subjects and faculties at the end of each semester as a continuous review and improvement process in the quality management cycle. The Student Feedback Survey (SFS) is a standardised instrument that collects subject data about the students' perceived performance of individual teaching staff and subject content and materials.

The survey data is used to provide individual staff with professional development feedback, and to provide students the opportunity to give regular feedback on their subject experiences.

The SFS, at the time of the study, were paper-based surveys that were completed anonymously in class at the end of the semester. A student representative collected and placed the SFS in a sealed envelope, witnessed by another student, and returned to the Course Co-ordinator. The data was analysed and reported against teaching data, subject data, and then aggregated by subject, course, faculty, and the whole of the university. The results were distributed to each faculty, course and subject co-ordinators.

The SFS results provided quantitative figures relating to student satisfaction with the learning methods, content, and overall subject. These results were intended to compare the overall experience of learning as reflected in the final written responses to be used as an additional validity check.

Only two questions in the SFS directly related to the students' overall experience of the subject and their learning. Other questions that related to teacher or lecturer feedback or specific subject content have not been included in the analysis.

The researcher, as the lecturer, had taught the subjects used in the research project in the previous year; consequently the results were available for comparison for each of the university subject research groups (Groups 1 – 3, see Section 4.3.2).

It is important to note that no such feedback survey was available for Group 4 in the organisational context. The subject had not been conducted previously; hence no benchmarking results were available. Additionally, the feedback format for vocational subjects was purely qualitative and could not be compared in a consistent manner with the university subjects.

The next section will detail how each of the data types were analysed and which element of the methodological framework they were aligned to.

4.5 Data analysis

In this section, the data analysis process will be described with reference to each of the research questions and the methodological framework. Tables 4.3 – 4.5 show an overview of method, data type and analysis against each research question.

The phenomenographic analysis method was used to explore the participants' experiences as a group, while validating (comparing) the group variation in experiences against the researcher's field note accounts using interpretive analysis. In addition, student feedback surveys were reviewed for any variation against the phenomeno-graphic and interpretive results and against the previous year's (2004) results. As detailed in Section 4.4, Data types and collection methods, student feedback surveys were not available for research participants in Group 4.

The framework for data analysis involved two distinct phases: 1) reviewing the online, web-based data in the live environment on the participant's weblog, and 2) further review and analysis that was conducted from annotated Word documents that contained the downloaded data types.

The significance of segmenting the data analysis into two phases was to allow a richer experience with the online data in its intended format, live on the participant's weblog, that could not be achieved by only reviewing the content in downloaded Word format.

The phenomenographic process informed the overall approach and followed three iterations of data analysis. These are outlined below and will be used as the basis for reporting findings in Chapter Five.

First iteration

The data was reviewed to determine initial thematic groupings that related to research question one and indicated a structural process, or how the participants approached the learning tasks involved in developing a DLN. Data for research question two followed the same method to determine thematic groupings related to the referential process, or what actions the participants undertook to develop a DLN. Research question three addressed the overall experience of the group as a collective to determine the nature of their learning experiences.

The initial thematic groupings were reviewed against the participants' visual representations and researcher's field notes and student feedback surveys to determine any discrepancies in approaches or further areas to review.

The thematic groupings were codified to arrange responses into initial collections that related to the research questions. See Table 4.3 in this section for thematic codes and associated explanations. These combined findings were mapped to the activities in the stages of the 5SPF; see Chapter Five, Part 1.

Second iteration

The thematic groupings from the first iteration of data types against the three research questions were analysed to determine the phenomenographic categories of description. The analysis determines the relationship between the thematic groupings to determine a hierarchical or structural relationship between the variations in the participants' experiences. The categories of description indicate the pedagogically significant way the participants approached the learning activities to develop a DLN and their collective perception of the nature of their learning in an online self-published network. See Chapter Five, Part 2, for the categories of description.

Third iteration

The final iteration of data analysed the findings from the first two iterations to determine expanding themes of awareness that would inform the development of the phenomenographic outcome space. The outcome space represents the structural groupings from the dimensions of variation outlined in the categories of description, which highlights the referential relationship between the themes (Akerlind 2005b). The outcome space is the essential component of the phenomenographic methodology and

the relationship between the expanding themes of awareness provide actionable outcomes that can be applied to further research or pedagogical practice.

Table 4.3 Thematic codes

Thematic grouping	Data code	Explanation
Time identifier: **Weekly commentary** **Final written response**	WKLY FNL	Codes used to distinguish between weblog data types. Specifically the weekly commentary (data type 2) and the final written response (data type 1) (see Section 4.4).
Technology: Challenges – positive Challenges – negative	TechC+ TechC-	Responses that mentioned any technology challenges. These have been divided into positive and negative codes due to some participants mentioned challenges but were able to view the issue with a positive perspective.
Emotions: Positive Negative	Em+ Em-	Responses that made explicit any positive or negative emotions towards the learning experiences.
Support (from more knowledgeable others – MKOs)	MKO	Responses that referred to the support of others – either within the classroom cohort or externally.
Concept formation: Struggled – negative Developed – positive	CF- CF+	Responses that either explicitly or implicitly referred to the understanding of concepts being introduced. Those who struggled to understand are coded as negative; those who indicated or demonstrated concept development were coded as positive.
Metacognition and reflection	MetR	Responses that indicated levels of metacognition and reflective practice.
Self-efficacy	SEff	Responses that demonstrated behaviours that indicated self-efficacy related to tasks and learning experiences.
Self-publishing	SPub	Responses that either referred to or inferred the act of self-publishing.
Collaborative learning **Knowledge sharing**	CL CLKS	Responses that related to collaborative learning behaviours or mentioned sharing knowledge with other.
Relationships	Rel	Responses that referred to or implied relationships with other learners.
Developing a network	Net	Responses that referred to the process of developing a network.

Research Question 1 (RQ1): How did the participants approach the task of developing a distributed learning network?

Research Question 2 (RQ2): What were the participants' experiences of the process of learning in a network?

Research Question 3 (RQ3): What were the participants' perceptions of the nature of their learning from online self-publishing?

4.5.1 Phenomenographic analysis

Phenomenographic analysis requires an iterative, comparative process that is intended to distinguish the range of variation in the ways of experiencing the phenomenon being studied. The process requires the researcher to view the data as whole, not as individual pieces, through constant comparison and iteration, looking for patterns that will form the categories of description and create the outcome space.

As indicated in Table 4.4, phenomenographic analysis was applied to three data types, across the three research questions. The analysis process is described below for each of the data types.

Table 4.4 Phenomenographic analysis data types and research questions

Data Type	RQ #1	RQ #2	RQ #3
1. Participants' written response	X	X	X
2. Weblog commentary	X	X	-
3. Weblog structure	X	-	-
4. Researcher's field notes	-	-	-
5. Participant's visualisation	-	-	-
6. Student Feedback Surveys	-	-	-

1. Partic...

cipants' written response

All written responses on weblogs, across all four participant groups, were read through live online, providing the researcher the opportunity to interact with the online experience and follow any hyperlinks used. Overall, initial impressions were noted; although no attempt to create categories of description were made at this point.

The second phase was to return to each weblog, download the written response into Word documents (de-identified), making some initial notes and attempting to note patterns through the use of keywords that referred to research question 1, i.e. how did they approach the task of developing a DLN.

The third phase involved reviewing these loosely formed groupings and the written responses, paying attention to research question 2, i.e. what was their experience of the process. These groupings were culled and re-grouped into their associated patterns.

The fourth phase focused on research question 3, i.e. what was their perception of the nature of their learning. Again, groups were formed, culled and re-grouped into their associated patterns.

Each research question used a different colour highlighter on the written response in Word document format to capture statements, and keywords were written on matching colour post-it notes.

The final phase was an overall review of group patterns across the three research questions, naming of the categories through use of keywords and a culling process that reduced the categories into five key types of responses, or categories of description.

2. Weblog commentary

The process described for data type 1 above followed a similar process. The weblog commentary that related to the weekly tasks from the 5SPF were located and reviewed online in their live, dynamic context. As each post was date stamped, the location of appropriate posts was a straightforward procedure.

The second phase involved the retrieval of each weblog's set of posts and downloading them to Word documents (de-identified). The posts were collated in two ways, by stage in the 5SPF, and as a total for each weblog. The separation by stage was reviewed against tasks in the pedagogical framework to determine insight into how the participants approached the tasks. The review of the entire set of posts from each weblog focused on patterns and groupings against RQ1 and RQ2.

The third phase involved reviewing the commentary as a whole against the categories of description from data type 1, the participants' written responses. The process involved reviewing statements to support the existing categories and identifying any gaps or additional groupings that were not previously apparent.

The final phase reviewed the overall results of groupings and categories for data types 1 and 2 and further refined the naming of these categories of description.

3. Weblog structure

The weblog structure was reviewed as further validation against RQ1. Primarily, the value gained was from interacting with the live weblogs, evaluating the features and characteristics (as described in Section 4.4, Data type and collection methods).

The overall achievements of the research participants towards implementing the weblog structure provided insight into how they had progressed through the tasks of the 5SPF.

In turn, this provided insights into areas of difficulty with technical and conceptual aspects of developing a DLN.

Screen shots of each weblog were taken and annotated with highlighted examples of actions relating to the tasks in the 5SPF. The documents were then reviewed and collated against the categories of description from the participants' written responses and weblog commentary and where examples related to these categories.

4.5.2 Interpretive analysis

Interpretive analysis requires the researcher to work inductively, requiring a focus on the context with a level of reflexivity. In particular, this approach required the analysis of the researcher's field notes to be sensitive to the relationship of the researcher to the research participants (as outlined in Section 4.6.1, Social Issues: the researcher).

As indicated in Table 4.5, interpretive analysis was applied to two data types, across the three research questions. The analysis process is described below for each of the data types.

Table 4.5 Interpretive analysis data types and research questions

Data Type	RQ #1	RQ #2	RQ #3
1. Participants' written response	-	-	-
2. Weblog commentary	-	-	-
3. Weblog structure	-	-	-
4. Researcher's field notes	X	X	X
5. Participant's visualisation	-	X	-
6. Student Feedback Surveys	-	-	-

rcher's field notes

The researcher's field notes were based on observations as each group completed weekly tasks related to the 5SPF. Reviewing these observations, noting the key behaviours and reactions of each group provided an interpretation of the meanings of the group experiences, from the perspective of an informed practitioner.

The categories of description were reviewed against the field notes to determine where or whether any correlations were identifiable and what, if any, actions were taken and the outcomes or influence of these actions.

5. Participants' visualisation

Using an interpretive perspective, the diagrams produced by the research participants were viewed live on their weblogs; some contained hyperlinks, although predominantly the visualisation was produced in software that created an image that could be embedded into their weblog posts.

The visualisations were reviewed directly with their associated weblog in the first instance, to determine the relationship between the written explanation and the visual representation. Subsequently, the images were downloaded to Word documents and evaluated separately from all written work to gather an overall impression of the participants' perspectives of DLNs.

Theoretical perspectives of visual learning describe stages of perception (Hortin 1994; Stern & Robinson 1994) that relate to the learners' frame of reference: selection, paying attention to simplicity; organisation, determining patterns of similarity; and interpretation, giving meaning to the concept that can be stored and retrieved for future use. These stages provided a method for analysing the visual representations and with comparable phases to Vygotsky's ZPD (1978) and Bandura's abstract modelling (1977b), they were a valuable tool to interpret both how the participants developed their DLNs, but also how their experiences were able to be interpreted against the sophistication of their mental models of DLNs.

A further frame of reference, described by Marton and Booth (1997) as the learner's horizon or view of the structural and referential aspects of learning, was used to analyse the construct or perspective of the student's network representations. An external horizon or perspective views elements that are experienced as part of the whole, whereas an internal horizon focuses on the relationship of the parts. In terms of analysis of the visual representations, network diagrams with an external horizon would be focused on the overall structure of the learning experience and understand the inter-connectedness in their DLN. On the other hand, the internal horizon would focus on the task and how they, as the learner, where represented in the network.

And finally, the visualisations were reviewed against Baran's (1964) three types of networks (see Figure 4.1 in Section 4.4.5) to determine relatedness from a structural perspective.

The variation in the visual representations of the student's DLNs will be detailed in Chapter Five, Section 5.1.6.

The findings from the visualisations were included in the analysis for the second iteration of data to inform the development of the phenomenographic categories of description.

4.5.3 Quantitative Analysis

As indicated in Table 4.6, quantitative analysis was applied to one data type, and only one research question, as indicated in Section 4.3, Rationale for research design. The quantitative results from the SFS was used as a form of validation against the claimed experiences of the group, as a collective. The analysis process is described below.

Table 4.6 Quantitative analysis data types and research questions

The comparison of the results,

Data Type	RQ #1	RQ #2	RQ #3
1. Participant's written response	-	-	-
2. Weblog commentary	-	-	-
3. Weblog structure	-	-	-
4. Researcher's field notes	-	-	-
5. Participant's visualisation	-	-	-
6. Student Feedback Surveys	-	-	X

2004 against 2005, provided a benchmark review including overall rating for the subject against the entire university, the faculty and the subject. The results for 2005 were also examined against data type #1, the participant's written response to determine if there were any inconsistencies with stated learning experiences and reported feedback from the survey.

4.6 Contextual influences and considerations

The approved Ethics Submission for the study addressed a number of contextual influences and considerations that may have affected the researcher and research participants during the collection of data over the duration of the research period and the likelihood of such risk or harm occurring. These considerations were divided into two main areas: the social (including pedagogical strategies) issues, and the technical issues.

It is pertinent to note that during the research process and data collection few of the identified risks and only one unidentified issue occurred; see Section 4.6.1, Unidentified issues.

4.6.1 Social issues: the researcher

The contextual influences and considerations relating to the researcher within the design methodologies were examined above in Section 4.3.1 of this chapter. The ethical considerations, however, needed to reflect identified issues and provide strategies to manage and mitigate these issues, should they arise.

The preparation of the ethics submission took into account the contextual influences and considerations raised by the researcher's location in the study, as described in Section 4.3.1. A number of issues were identified, outlined below, and strategies developed to mitigate or reduce their impact on the researcher and the study.

- **Identified issues addressed in the Ethics Submission**

  The study highlighted new ethical considerations that were stated to be a first of this nature for the University Ethics Committee. The inclusion of the internet as a core source of data, while the students were required to publicly publish their work, and the relationship of the lecturer, as described in Section 4.3 Rationale for research design, presented new and novel considerations that were not typically present in traditional research ethics submissions. The key considerations addressed in the Ethics Submission are outlined below.

- **The researcher as the lecturer**

  The relationship to the research participants as their subject lecturer inadvertently created a power dynamic. A profound awareness and understanding of the nature of the power relationship between the student and lecturer created a situation which embedded me as part of the research, an active participant in the learning environment, both online and in face-to-face contexts – not a detached, neutral observer.

Additionally, a number of students, potential research participants, may have had an existing relationship with me, as a lecturer in previous subjects. In addition, many may be potential students in future subjects.

To address this issue, the research participants were made aware of the research study process at the beginning of the subject, while I established a design process that created an environment where there was no feeling of coercion or power that would influence their subject results. Furthermore, the process was designed to ensure those who had agreed to participate were not reporting outcomes and experiences they thought I wanted to hear.

The design process has been outlined in Section 4.4, Research design, of this chapter. The key point of emphasis relevant to this issue was the process of consent and the process to raise any concerns with a third party (the Course Co-ordinator), not the researcher as their lecturer. The Dean of the Faculty had also reviewed and approved the process.

To my knowledge, no concerns were raised with any of the contacts provided on the Consent Form, and I was unaware throughout the semester which students had agreed to be participants in the research project.

- **Emotional discomfort for the lecturer managing student emotions**
  As outlined above, my experience as an educator contributed to my ability to plan and manage student emotions during novel learning experiences, in particular with social software.
  In order to specifically address these sources of discomfort, as the Lecturer I provided both academic and technical support throughout the subject. The activities incorporated in the 5SPF were intentionally designed from previous experience to minimise areas of previously noted challenges and reduce the cognitive load, leading to emotional discomfort for the students.

A small number of students did encounter difficulty in the early stages of the subject with the set-up of their software; however, these were handled individually and I managed to reduce student embarrassment or distress.

- **Impact on the lecturer if research design and results were affected**

  The Ethics Committee were particularly concerned about the impact on me, as the researcher, should the research study during the data collection period of the subject not follow the intended design, and potentially not provide sufficient data or expected results.

  As I was not aware which students were participating in the study until after their results were finalised, I did not consider individual performance in the subject. The research methodology was designed to study the groups' experience rather than focusing on individuals; where the individual is not the focus for data collection or analysis, the researcher's attention shifts to differences between experiences, rather than differences between individual performances.

  To further detach my role as lecturer and researcher, to minimise impact on the students and results, I utilised an approach of prioritising my focus of attention. During classroom face-to-face sessions, my entire focus was on the lesson plans, content, and student learning needs. In contrast, after a face-to-face session, I would write as a reflective practitioner, capturing my observations and interpretations of the groups as a whole for my research field notes. The online environments were treated in the same manner; if I was participating as their lecturer, my focus was entirely on the student learning experience. At the completion of any work online, again, I would reflect and capture field notes.

  The design, collection, and analysis of data had been informed through the experience of the researcher as a lecturer; at no time did I experience any discomfort or concern that the data, or subsequent results, were being affected by how the students were participating in face-to-face or online learning environments.

Unidentified issues, not addressed in the Ethics Submission

Early exposure of results from the researcher's field notes were published by another academic.

A social issue that directly impacted the researcher, but had not been identified during the ethics submission process, was the public publishing of some research findings and work in progress from my research weblog.

As with any publicly published work on weblogs, I was always vigilant not to release information that included information with the potential to identify the research participants. To further protect my work, copyright statements were used and a licence from Creative Commons (internet copyright body) covered all my articles and entries on my weblog. However, I was present at an international academic conference, where I noted that segments of my work, some early findings and results, were incorporated into another academic's paper and presentation. At this point in time, referencing weblogs was not consistently practised and I noted no reference or attribution of my weblog posts or any mention of my research project contributing to the main thesis of the paper.

As a consequence, I responded by removing all my field notes and early findings from my weblog to avoid the risk of further exposure of incomplete findings or inaccurate inferences being made from concepts and results that were still being formulated.

These actions did not impact the study results or in any way compromise the research participants. However, it did impact my previously open feedback strategy as described in Section 4.2.2, Phenomenography, in the communicative validity checks segment.

The social issues regarding the contextual influences and considerations of the researcher were complicated by the location of the researcher in the role of researcher and lecturer. By selecting methods of research that acknowledged the duality of the role and considered the potential for impact on both the research participants and the results, the influence on the outcomes were anticipated and addressed throughout the research process, minimising any negative effects.

4.6.2 Social Issues: the research participants

The following social issues relating to the contextual influences and considerations for research participants were addressed in the Ethics Submission:

- The process of publicly publishing their work to the internet;

- The participants' ability to develop DLNs;

- Guidelines for publishing content to the internet; and

- Management of student emotions.

4.6.2.1 Publicly publishing

The essential elements of publicly publishing to the internet that were addressed in the research process were:

- Confidence of the research participant to publicly publish study materials to the internet;

- Receiving comments or feedback on weblogs – potentially from people unknown to the students;

- Disclosure of personal information; and

- The responsibility of publishing publicly.

At the time the research study was conducted in 2005, the experience of using weblogs and communicating publicly was a completely abstract and novel process for the majority of the research participants. Current social networking sites such as Facebook, Twitter, and YouTube had not been launched and only a small number of the younger students had MySpace accounts (launched in August 2003), but none of the research participants had their own weblog.

Previous experience indicated that most people will experience a level of embarrassment and/or self-consciousness when they are required to publicly publish their first post to their weblogs; however, activities and tasks within the 5SPF were designed to assist the participants to overcome these issues. The 5SPF, as described above in Chapter Three, Part 2, was developed from previous practice that had been successfully employed to address this process.

Additionally, receiving comments on your weblog from others, either within your study cohort or externally, that are negative can be a challenging experience. However, the

nature of the DLN intends to create dialogue and support debate. Nevertheless, some comments could be considered inappropriate and students were provided with ways to respond and/or manage these comments. Unwanted comments (deemed offensive or inappropriate) were deleted and the sender blocked from contributing in the future. There were a couple of these incidents reported, but the students followed the process, deleted the comment and blocked the user – the students reported no distress or concern.

Furthermore, students were advised and guided to the amount of personal information they chose to disclose on their weblog. The general protocol in most cases included no phone or address details, simply a name and email contact. In some instances students chose to use pseudonyms and/or generic email accounts rather then their university or workplace email.

The responsibility of publishing publicly is addressed below in Section 4.6.2.3, Ethical publishing.

4.6.2.2 Developing DLNs

The concern raised during the design process was related to the issue of research participants being unable to develop a DLN, and how this would effect the research project. As the research project was focusing on understanding the learners' experiences of developing a DLN and testing the 5SPF, designed to guide participants through the process, this concern was considered an integral part of the research study and findings.

Similarly, researching and identifying a learning network was a new experience for most students. The process of how to identify a hub (or expert weblog) was covered as part of the subject content and the 5SPF, while useful reference weblogs were also provided as guides and ongoing support was included in the subject activities.

4.6.2.3 Ethical publishing

Another ethical issue that was identified and strategies put in place to address it, was based on the researcher's previous experience with students publicly publishing their thoughts to weblogs. The need to understand the responsibility, protocols and ethics of

publishing comments to publicly available spaces, such as the internet, addressed the following core elements:

- Defamatory or slanderous comments about other people;

- Breach of copyright; and

- Plagiarism.

These issues were included as part of the subject content and the 5SPF to establish ethical publishing practices.

The Australian Journalists Association Code of Ethics (Media, Entertainment and Arts Alliance 2005) was used as a basis for developing basic frameworks for informed commentary and all opinions on topics were required to be substantiated by references and evidence, unless referring to personal experience.

To further support participants with the publishing processes, all weblogs were monitored by the lecturer for any potentially damaging comments and at no stage in the research process were any issues found. However, a breach of copyright was raised where a student copied and pasted photographs of a celebrity into their weblog without the permission of the original photographer or the original source web publication. The issue was highlighted to the class and the importance of copyright being recognised was addressed and the photographs were removed from the student's weblog.

4.6.2.4 Student emotions

Managing the students' emotions if they were having any difficulties in this new medium was addressed during the early stage activities of the 5SPF framework and considered part of the role for an experienced educator in the educational setting.

Nonetheless, some students did find the use of weblogs challenging from a digital literacy perspective but the number was less than ten per cent of the research participants or approximately five out of sixty experienced difficulties. The students exhibited their challenges through anger and defiance, sometimes publicly expressed on their weblogs, which was managed by working individually with the student and

through peer support. Further discussion relating to this issue will be expanded upon in Chapter Five, Findings and Discussion.

4.6.3 Technical issues

The most important technical consideration in this research project was related to the selected software. WordPress was chosen as a stable, reputable open source weblog application that provided the functionality and flexibility required for the participants to develop DLNs. However, alternative software companies were reviewed and new weblogs could have been migrated to if WordPress ceased to exist. Students were also advised to keep back-up copies of their work in Word documents.

WordPress was selected based on ease of use and requiring no knowledge of HTML programming skills. It is relevant to note that WordPress, at the time of the research study, had limited rich media capabilities. To ensure all students, regardless of their level of computer literacy, were able to achieve the required learning tasks, online tutorials were created and classroom time was spent at the initial set-up stage ensuring all students were familiar with the basics required for proficiency – this related directly to Stage 1 of the 5SPF. Students were encouraged to use peer support and a discussion forum in the university LMS was available to address further questions or issues.

In addition, to ensure the university was not at risk of damage to its reputation and standing due to inappropriate (defamatory comments, breach of copyright) student work, the software being used was not hosted on the university servers and the weblog addresses had no identifying reference to the university. Additionally, the software companies selected all have terms and conditions that require ethical behaviour and have the right to remove any weblog that does not adhere to these terms. Students were required to accept these terms and conditions during the initial set-up phase of their weblogs.

No technical issues were experienced during the period of the research study, and WordPress remains one of the most powerful self-publishing platforms currently available.

4.7 Chapter summary

This chapter has described the selected research methodologies and rationale for the design of the project, while outlining the data types and analysis approaches, and finally overviewing the contextual influences and considerations in the design process.

While the challenge remains for qualitative internet-based research inquiry to reflect and respond in a pragmatic way to the rapidly changing social and technical environment, the development of a more systematic research methodology to support rigorous internet-based research projects will be necessary. The selection of novel methodological approaches at the time the study was conducted provided opportunities for the collection of rich, dynamic data types; it also required purposeful design to support the analysis process for the selected data types.

The essential element of design for this research study was finding methods that aligned with the research aims and questions, while avoiding following the dominant methodologies of the time, namely a purely quantitative approach that would not have enabled the full investigation of the learners' experiences.

In Chapter Five, the results from the analysis of the six types of data will reveal the phenomenographic categories of description and outcome space. The findings will be discussed and the implications for the application of a pedagogical framework that integrates a new approach to learning with the introduction of social software will be highlighted. The limitations of the research are identified and recommendations for further research projects are made.

Chapter Five
Findings and Discussion

5.0 Introduction

The aim of this study was to investigate the learners' collective experience of self-publishing and developing distributed learning networks (DLNs). A review of literature and informed by the researcher's practice indicated a need for an integrated pedagogical framework to enable the potential of social software and networked learning to be fully realised.

The 5-Stage pedagogical framework (5SPF), detailed in Chapter Three, Part 2, was used to enable the research questions to be answered by gathering the learner experiences and understanding the value of the pedagogical approach.

In Chapter Three, an overview of the early versions of the 5SPF, developed prior to the final version used in this study, and related theoretical perspectives that underpinned this final version, provided the foundational frame of reference. Part 2 of Chapter Three extended the theoretical foundations by describing the final version of the 5SPF that was applied to this research study by outlining each stage of the framework and positioning the associated theoretical perspectives with the particular areas of influence and relating the pedagogical approach applied at each stage.

Chapter Four detailed the research design and methodology. Here it was argued that the need to address particular contextual challenges at the time of the study relating to aspects of an emerging field of multi-disciplinary practice required the design of an original methodological framework with multiple sources of data. The qualitative paradigm was selected as the most appropriate to address the research questions. A combination of interpretive and phenomenographic methodologies underpinned the methodological framework, with a quantitative element to validate certain aspects of the qualitative data.

The data types and collection methods (see Chapter Four, Section 4.5) included a number of learner interactions on their weblogs. Weekly posts and weblog structural aspects directly related to the learning tasks within the 5SPF, while the final written

response was comparable to a structured face-to-face interview. The researcher's field notes provided additional insight from an experienced practitioner's view of the pedagogical approach, while the quantitative data from the student feedback surveys conducted by the university added a further point of reference.

The data collected provided a validation of learners' experiences from a number of perspectives and resulted in a depth of materials that extended across an elapsed period of time. The nature of data collected in this manner afforded an authentic view of the learners' experiences as they occurred, while additionally providing the learners the ability to review and reflect upon their experiences prior to preparing their final written response (see Chapter Four, Section 4.5.1). The findings outlined in this chapter will highlight the type of richness from the data that arguably could not have been achieved using traditional qualitative face-to-face interviews at a single point in time, typically at the end of the research period.

A core element of the methodological framework was the phenomenographic approach to data analysis, which follows a complex set of methods to achieve a valuable set of results. The iterations of analysis facilitated the development of the phenomenographic categories of description (see Part 2 of this chapter), which were used to gain an understanding of the qualitative variation in the experience of the learners. The categories of description were subsequently used to determine the emerging themes with reference to the research questions that formed the basis of a structural and referential relationship that represents the phenomenographic outcome space (see Part 3 of this chapter), labelled the DLN outcome space.

Situated against the backdrop of the DLN outcome space, the discussion in this chapter will be integrated with insights implied from the results as the focus shifts towards a contemporary, forward oriented perspective. The richness of the data and the findings provided a strong framework for the consideration of contemporary practices and highlights the subsequent transferability of the core concepts from the DLN outcome space into current contexts. It will be shown that the outcomes and their implications are directly relevant to the current learning environment where a plethora of social network and self-publishing technologies are readily available to educational contexts at every level. Further contemporary perspectives will be highlighted in Chapter Six with a focus towards future pedagogical practices and technology developments.

Within the context of the data analysis, the location of the researcher emerged as a major strength because of the duality of perspective it afforded (see Chapter Four, Section 4.4.1, The researcher). The researcher's field notes permitted a critical reflexivity that was applied to the findings in Part 1, while the perspective of the educator became important in Part 3, where the implications for practice afforded the application of knowledge and expertise to bring a contemporary view and forward looking significance to the discussion of the Connected Educator in the DLN outcome space; see Section 5.3.4 in this chapter.

Structure of Chapter Five

In this chapter the findings will be presented in three parts that correspond to the phenomenographic data analysis process.

In Part 1, the first iteration of findings, based on an analysis of the participants' weblogs, will be reported against the stages in the 5SPF to review research questions 1 and 2. This will be followed by a review of the participants' overall experiences that relate to research question 3. At each stage of the 5SPF findings, the researcher's field notes will be reported with a particular emphasis on reviewing the implication for the pedagogical approach.

Preceding the presentation of initial findings against the 5SPF in Part 1, Part 2 presents the second iteration of data analysis where findings from Part 1 informed the development of the phenomenographic categories of description to describe a structural representation of the participants' experiences.

Part 3 relates to the third and final iteration of data analysis that reviews both Part 1 and 2 findings, which led to the expanding themes of awareness and resulted in the phenomenographic outcome space, labelled the DLN outcome space. As indicated above, the discussion flowing from this will be incorporated with the DLN outcome space results as the findings are compared and contrasted with more recent research studies.

The final part of the chapter, Part 4, provides a summary of findings against the research questions and discusses the limitations of the study.

Figure 5.1 Chapter 5 RoadMap is a visual roadmap of the chapter and has been designed as a guide for navigating the iterations of data analysis and locating these to the findings and discussion.
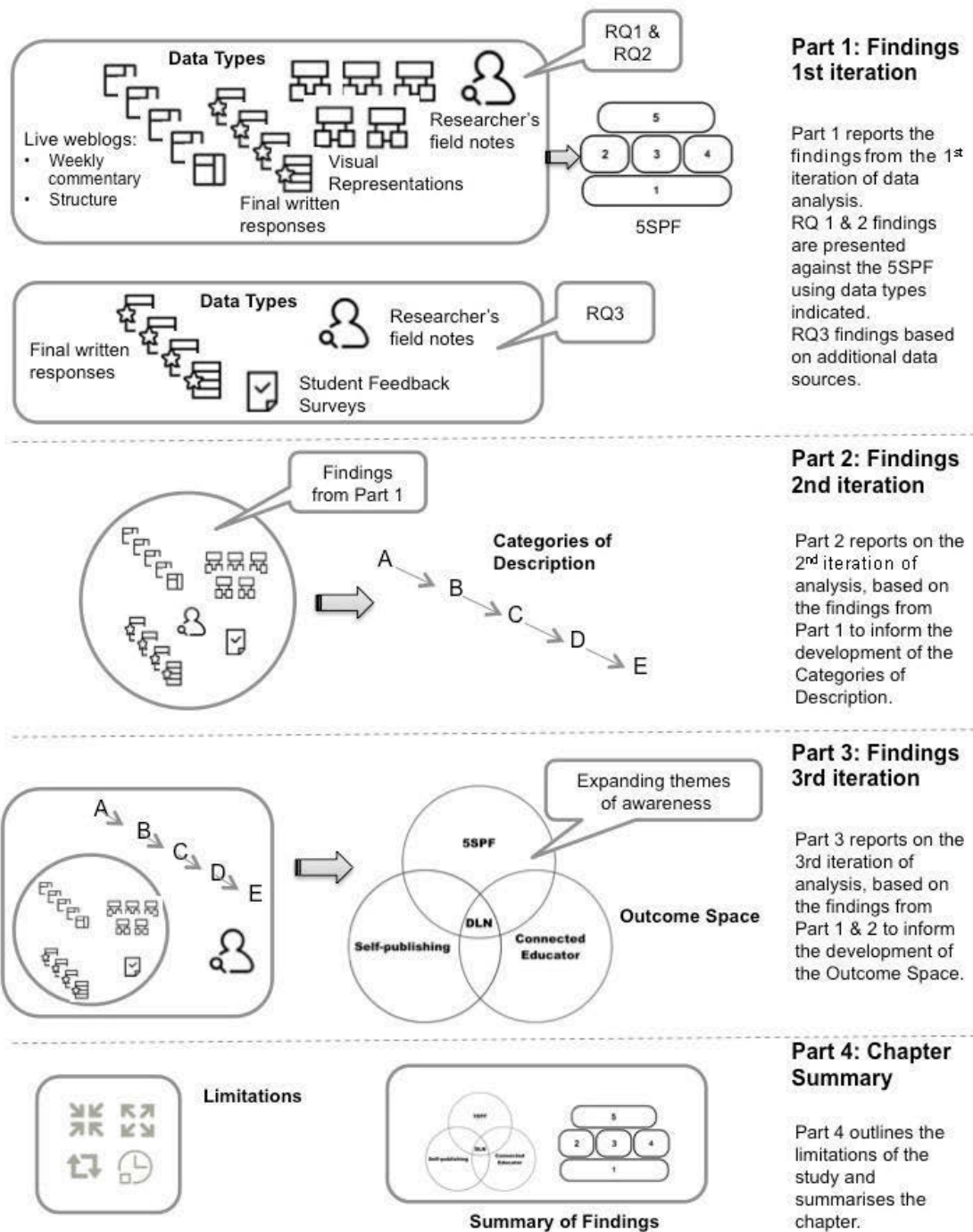
Figure 5.1: Chapter 5 RoadMap

Part1: Research findings – first iteration of data analysis

5.1 Research findings against the 5SPF

In Part 1 of this chapter, the first iteration of data analysis will be presented against the research questions. All the data types (see Table 5.1 below) were analysed and have been reported as they relate to each research question.

Quotes from research participants are included to illustrate the findings and have been thematically coded; see Chapter Four, Section 4.5, Thematic codes.

Table 5.1 Data types related to research questions

Data Type	RQ #1	RQ #2	RQ #3
1. Participant's written response	X	X	X
2. Weblog commentary	X	X	-
3. Weblog structure	X	-	-
4. Researcher's field notes	X	X	X
5. Participant's visualisation	-	X	-
6. Student Feedback Surveys	-	-	X

Based on the phenomenographic analysis process, the research questions are intended to reveal the experiences of the learners. Each research question emphasised specific aspects of the learners' experience and associated data types were analysed to identify the learners' approach to learning or their perception of the experience. These are restated below, including the analysis approach that was part of the methodological framework.

Research Question 1 (RQ1): How did the participants approach the task of developing a distributed learning network?

The central focus of this question relates to the 'how' aspect of the research as a process of learning. How did the participants approach the tasks within the stages of the 5SPF? How did they structure their weblog to enable the development of a network? How did they represent themselves on their weblog? How did they go about creating a DLN?

The data types collected to address this research question included the participants' written response, their regular weblog commentary and posts during the semester and this research project, the structure of their weblog, and the researcher's field notes. (See Chapter Four, Section 4.5, Data types and collection methods, for details.)

As explained in Chapter Four, Section 4.6, the data analysis applied the phenomenographic approach to the participant's written responses, the weblog commentary, and the weblog structure. The researcher's field notes were analysed using an interpretive approach.

Research Question 2 (RQ2): What were the participants' experiences of the process of learning in a network?

The focus of this question was on an exploration of the participants' learning processes in a network. The underlying sub-questions related to their experiences and the ways in which they described their approaches to the technology and the challenges they faced. What was their experience with new and novel approaches to writing tasks? What was their experience of organising content for publishing to their weblogs? Finally, how did they visualise their network and what did the influences of this mental picture have on their experiences of developing a network?

The data types used for this question were the participants' written response, their weblog commentary, their visual representation of their network, and the researcher's field notes. (See Chapter Four, Section 4.5, Data types and collection methods, for details.)

The analysis of the data used the phenomenographic approach for the participants' written response, their weblog commentary, and an interpretive approach for their visual representation, and the researcher's field notes. (See Chapter Four, Section 4.6, Data analysis.)

Research Question 3 (RQ3): What were the participants' perceptions of the nature of their learning from online self-publishing?

The overall experience and understanding of the participants' perceptions of learning and self-publishing, as a process of developing and learning in a DLN, and its effectiveness as an enabler or detractor to their learning were addressed by this research question.

The data sets included the participants' written response, the researcher's field notes, and results from student feedback surveys. (See Chapter Four, Section 4.5, Data types and collection methods.)

The analysis methods used a phenomenographic approach for the participants' written response; an interpretive approach for the researcher's field notes; and a quantitative comparison of student feedback surveys from the year the research was conducted in 2005, against the results of the previous year. (See Chapter Four, Section 4.6, Data analysis, for an explanation of the methods used.)

Findings reported against 5SPF

The first iteration of analysis reviewed the data for RQ1 and RQ2 on the participants' weblogs. Viewing the data online enabled the experience of interacting with the participant's weblog, being able to click through the hyperlinks to analyse the structure while mapping this against the weblog commentary and the final written response from participants. Although each weblog was reviewed individually, it is important to note in the phenomenographic analysis process, the data is considered as a collective grouping of data sets. For example, all weblogs were reviewed for their use of categories to organise information. Initial themes of how participants approached the task were noted and grouped before a second phase of review was conducted to refine the groupings. This data was then matched against what participants had written in both their weekly commentary and final responses. Finally, the researcher's field notes were reviewed for references relating to the use of categories.

The first iteration was examined against each stage in the 5SPF to determine the initial groupings of themes that would inform the development of the phenomenographic categories of description.

Outlined below is the first iteration of results by stage in the 5SPF and the review of the researcher's field notes. Following the five stages of the framework, the overall experience relating to RQ3 is presented, with subsequent analysis of the participants' visual representations and student feedback results.

5.1.1 Stage 1: Establishment

The objective of Stage 1 was to focus on the concepts of self-publishing and DLNs, and the set-up of the technology platforms (see Chapter Three, Part 2, for a full description of activities and pedagogical strategies).

Stage 1 is the critical foundational phase where previous applications of the earlier versions of the 5SPF (prior to the commencement of this study) indicated that participants experienced the highest level of challenges with either the technology infrastructure and/or the concepts of self-publishing. The participants in the research study posted very limited commentary at this stage, but carried forward their emotional experiences through to their final written responses which will be discussed in the findings for RQ3.

The main themes emerging in Stage 1 related to participants' technical capabilities, participants' emotional declarations, finding support, and concept development. The following section provides a brief overview and this is accompanied by selected quotes, with thematic coding, from the participants' weblog commentaries in order to illustrate the theme.

Participants' technical capabilities

The self-professed levels of technical capability that were featured in their commentaries varied greatly across the participants with the majority claiming very low levels of computer literacy. These claims were used by some of the participants to explain the difficulties experienced during the weblog set-up activities.

> *The weblog is still a struggle for me at times, it never does what I want!!! I need to complete an online tutorial of how to use it. At times I can be technologically challenged.* (Wkly/TechC-)

> *I was confused by the codes and their usage – I would have preferred a user manual.* (Wkly/TechC-)

Both these quotes from participants' weblog posts represent a negative reaction to the technology-based activities for setting up their weblogs. Both participants have highlighted their preference for support materials, which was provided as a step-by-step guide with screen shots. What the participants are indicating is related to the abstract concept of setting up a self-publishing platform that requires more than a simple login and password process.

On the other hand, there was one participant who declared to have low levels of technical capability, yet accomplished the set-up phase without the expected challenges.

I had never heard about weblogs before, I was not a computer literate at all and this experience has introduced me to how straightforward it all is. (Wkly/TechC-/MetR/SEff)

This participant has been able to achieve what was expected to be a challenge (due to their stated levels of computer literacy), demonstrating some initial level of metacognition and self-efficacy that allowed them to progress through the tasks.

Participants' emotional declarations

The early posts to their weblogs during the set-up phase exhibited a range of emotional declarations from anger, frustration, and annoyance to anxiety, confusion, then delight and exhilaration. Predominantly, these emotions were directed at the lecturer as a stream of consciousness style of writing, without an expectation of receiving a reply.

Well I'm here after much stress and anxiety. I am beginning to think I really am a technophobe and if not, then I am definitely a little slower than most to catch on to using all the applications available to us. (Wkly/Em-/MetR)

This quote from a weblog post indicates a lack of metacognitive awareness, and the use of self-comparison theory that compares the achievement of others against their own perceived underperformance.

…it was a nightmare to begin with… (Wkly/Em-/MetR/SEff)

The participant has initially voiced their negative emotional state on their weblog but has demonstrated some level of metacognitive processes that indicate self-efficacy awareness.

Finding support

Time was allocated at the beginning of each class, and outside the class through ad-hoc face-to-face meetings, to support those participants struggling with either the technology or the concepts being presented. In addition, step-by-step guides and resources were provided. However, from the beginning, there was evidence of classmates providing encouragement and help to those experiencing difficulties.

I could access help whenever I needed with the other students in my class, which was fantastic. (Fnl/MKO)

...it was quite frustrating – not knowing how to do things but with the help of my colleagues and lecturer I was able to get into it. (Wkly/MKO*)*

These weblog posts are representative of the support that the learners provided each other, the concept of the MKO (Vygotsky 1978). Of note is the mention of the lecturer as an MKO alongside classmates.

Concept development

While the majority of participants indicated a general level of interest in the use of self-publishing with weblogs, reviewing the examples provided and attempting to align their personal experiences to the new concepts being presented, a small number struggled to construct relevance. Others had limited experience of weblogs as personal journals with friends, or a broad awareness, including as regular readers of weblogs in their areas of interest, for example, music, but had not extended these concepts to other approaches of self-publishing and learning.

I didn't understand the benefit to myself – this course was supposed to be about eLearning not blogging. (Wkly/CF-)

Why do I need to do this – I'm never going to use a blog again! (Wkly/CF-)

Both these participants' quotes represent a lack of concept development that has not allowed them to generalise or associate the concepts of self-publishing with learning. The second refers to an attitude that was present at the time of the study (and can still be encountered, albeit less frequently) that considered the use of social technologies as just another fad and not viewed as a potential long-term strategy.

Researcher's field notes

Stage 1 was the most demanding phase as the learners were coming to terms with both the technical challenges and the introduction of potentially novel concepts and approaches to self-publishing and learning.

The range of the learners' differing levels of computer capabilities and dispositions within the class created a dynamic of fluctuating needs and shifting attention between those who were keen to move on and those who needed assistance at almost every step.

In a small number of cases, additional technical sessions (face-to-face) were arranged to provide required levels of support that did not interfere with the overall class progress.

As highlighted in Chapter Three, Section 3.2.1.2, evaluating both individual and group progress through the lens of Vygotsky's (1978) ZPD and previous experience as a lecturer equipped me with the confidence to know when to provide the learners support or when to allow the learners to explore further to solve their challenges alone.

The activities in Stage 1 had been re-designed during the last version of the 5SPF, before the commencement of this research project to incorporate specific examples that modelled and presented a variety of concepts for the use of weblogs, with the intention of applying Bandura's (1977b) observational modelling (see Chapter Three, Section 3.2.1.1). However, the majority appeared less concerned about how the weblog would be used within their subject as a learning environment as they focused on the technology set-up requirements.

The sharing of weblog URLs on the subject LMS discussion forum had a profound effect. The more technically proficient were quick to set-up their weblogs and post to the forum, but equally as quick to provide guidance to those struggling, as noted in the theme, finding support. Essentially, the activity had enabled Bandura's (1977b) modelling and observational learning, but also early identification of Vygotsky's (1978) MKOs from within their class cohort (see Chapter Three, Section 3.2.1.2). I made a note, at this stage, to review the MKOs at future stages to determine whether and how roles changed within the cohort.

Applying Salmon's (2000) e-Moderation strategies at the access and motivation level (see Chapter Three, Section 3.3.1) and Baumgartner's (2004) Mode 2 approach (see Chapter Three, Section 3.3.2), within the pedagogical approach at Stage 1 required a conscious and consistent effort to maintain the balance between being supportive, while encouraging a level of self-direction as the learners set up their technology environments. It had become obvious through previous experiences as a lecturer that the nature of the set-up phases has a determining effect on learners' expectations about their engagement in the subsequent stages. To address this, I strategically planned and communicated my levels and channels of accessibility (that is, email, LMS discussion forums, and phone contact within specified time allocations). My field notes disclosed

the challenges to maintain these plans, and resist the impulse to rescue those who were struggling, in particular with the technology aspects of set-up. I had noted that more time in class was spent discussing the weblog concepts than teaching software set-up. This observation stands in direct contrast with aspects of the weblog commentary, in particular the emotional declarations perhaps emphasising the overwhelming nature of the experience for some.

5.1.2 Stage 2: Interpretation

The objective in Stage 2 was to build upon the technical and conceptual foundations developed in Stage 1 to create a structural framework to their weblog. In particular, the participants had the opportunity to create a personalised information management structure using categories and links while adding a new 'skin' or design to replace the default option.

The participants' regular weblog commentaries changed at this stage to feature slightly longer posts describing processes or responding to tasks in the activity framework. The themes that emerged from the analysis were: overall weblog structure, the structure using categories, the structure using hyperlink lists, the structure using a personalised weblog design, and finding support.

Overall weblog structure

There was a range of comments that referred to the process of applying organisation or structure to the presentation of the participants' weblogs. Although the concepts related to categorisation of information and use of lists to manage their learning would not have been new, the transfer of the principles into their weblog appeared to be a challenge for a small number of participants. In contrast, other participants were able to perceive the applicability in terms of both a personal and an external view of their weblog structure.

> *I'm struggling with my inability to compartmentalise the learning elements of this course. I'm getting lots of 'stuff' but it's not sinking in anywhere… at least not in the manner I would like to receive it. Information Overload!. Where to start?… in other words FOCUS on a tested methodology instead of trying to create one… but add your own flavour! Draw out a structure then drill down and flesh out. The*

Blog, the profile, the categories sometimes appear to be distractions but I'll persist hoping that what bubbles to the surface will be useful. (Wkly/CF-/TechCh-)

This weblog post is representative of the majority of participants at this stage, where they are reporting the experience 'information overload'. While the set-up stage is a linear process, how the structural elements relate to overall concept was not easily grasped.

The structure of my weblog assisted my learning very little at the start of semester – I was unsure why we would use categories for posts and did not see why they would be worthwhile – until the end of semester when I was trying to review my work! (Fnl/CF-)

This quote is representative of participants who were unable to fully develop the concepts until they were put into use, which in many cases was a number of weeks after this stage was completed.

A tool to structure my thoughts and also important for readers to find what could be interesting for them. (/Wkly/CF+/SPub)

This participant demonstrates the understanding of the structural concept of the weblog, both from a personal perspective but also the awareness of a reader. This level of concept development at Stage 2 was evident in only a small number of participants.

Structure: use of categories

The use of categories (see Chapter Two, Section 2.2.1) to organise and manage content varied dramatically. From a hierarchical perspective, reflecting the most basic application (because the subject assessment required them to use categories), through to awareness that it was not only a tool for their personal information management but also a guide for readers was displayed:

- Categories that used the subject headings:
  For example, Module 1 or Introduction to eLearning.

- Categories that related to topic groupings within the subject.

- Categories representing clusters of knowledge demonstrated intentional organisation of thought – several of these participants also commented that readers would be able to easily find areas of interest on their weblog.

- Categories that extended to include other subjects within their university course and personal hobbies, for example, photography or music.

Participants who were not able to fully grasp how to categorise their information typically used headings from the subject notes to represent their categories. The following comments are indicative of the variation in the learners' experience of organising their weblogs through the use of categories.

...the idea of putting what I was blogging about into categories seemed quite strange initially... (Fnl/CF-/SPub)

Categories enabled me to deal with different subject topics and set-up boundaries between them. (Fnl/CF+)

One of the nicest tools was the categories – it allowed me to think about what I would write in relation of what my interests were. (Fnl/CF+/SPub)

Both the comments above are indicative of these students' understanding of the practical applicability of the categories as well as their ability to discuss these in abstract terms.

Structure: use of hyperlink lists

The feature to create lists of useful links to other weblogs or sites was predominantly used as a replacement for a browser favourites list. It is significant to note that a common feature was to add a link to their classmates' weblogs for quick and easy access, while more than two thirds of participants added lists of sites that resembled a traditional academic reference list, or list of useful web-based resources.

The links helped because I didn't have to remember where I had read something, and then I'd have to find the address again. (/Fnl/CF+/SPub)

Links were part of the process through which I developed my learning. (Fnl/CF+/SPub)

These excerpts from participant weblog posts demonstrate the ease with which the participants adopted the concept of link lists; perhaps the similarity of browser favourites enabled this existing knowledge to be transferred more easily to their weblogs.

Structure: personalised design

The majority of participants applied new 'skins' or designs to their weblogs. There was not a wide selection available at the time the research was conducted, but a sufficient variety that enabled a more personalised look and feel to more effectively represent the weblog owner. The more technically savvy initiated additional customisation by including the use of images (which did require basic HTML skills at the time). No comments were recorded directly that related to the design or personalisation.

Finding support

Peer support continued from Stage 1 with the more technically capable providing assistance to their classmates. There were also direct comments about viewing other weblogs as a useful support mechanism.

> *…when I felt frustrated…without the support from my colleagues during that period, I don't think I could have survived!* (Fnl/MKO)

> *I learnt a considerable amount of technical information… from viewing other students weblogs.* (Wkly/MKO/TechC+)

As both these weblog posts reflect, the preferred support at this stage was from within their class cohorts.

Researcher's field notes

Stage 2 shifted the focus from the core software set-up and self-publishing concepts towards the adaption and personalisation of the learning environment. Although there was less dependence upon me, as the lecturer, for technical support, there was still evidence of uncertainty and anxiety as the learners attempted to interpret the structural framework and personalise their weblogs. The comments on their weblogs indicated difficulties initially separating a technical feature, such as creating the categories, from the information management aspect of organising content into logical groupings. It

appeared the examples provided as guides were not adequate to shape their understanding sufficiently and they resorted to observation and use of peer support.

It was noted that when learners were struggling with abstract concepts, their tolerance for ambiguity decreased dramatically and their ZPD (Vygotsky 1978) contracted, rather than expanded as had been intended through the incremental steps of setting up their weblogs.

Additionally, at this stage my field notes highlighted that the learners' self-efficacy (Bandura 1977a, 1997) was observable and connected to their ZPD (Vygotsky 1978), which was frequently expressed verbally in class sessions or reflected in their weekly commentary on their weblogs. Consciously designing and supporting activities that enabled learners to achieve small steps towards a more complex outcome was proving effective. However, as mentioned, the abstract concepts had a negative impact upon the application of principles to the technology framework.

The use of peer support, MKOs (Vygotsky 1978), had become more apparent in this stage. People were openly sharing and supporting, while those struggling appeared comfortable to ask for guidance. The MKOs remained the same peers from Stage 1, which was not surprising as the technical support focus was still dominant.

The concepts of creating structure on their weblog can be associated with Vygotsky's (1986) knowledge clusters (see Chapter 3, Section 3.2.1.2), as the learners started to pay attention to their technology framework. Participant comments that related to this issue were relatively small in number but taken together they gave clear indication that the participants' application of organising categories to their weblogs varied greatly, particularly at this early stage. Further development as the concept of categories to organise information synthesised during later stages of the 5SPF demonstrated the progression through a series of meanings and value to the learner. At this stage, the majority of learners were focusing on a view of their weblog as a platform to organise their information, while the concept of organising for an external readership was underdeveloped and noted.

The pedagogical approach remained similar to Stage 1 with an additional focus on the value of providing examples and support for abstract concepts. I noted the value of peer MKOs to support the technical set-up that reduced any tendency to revert to

Baumgartner's (2004) Mode 1 approach. I also noted that a stronger emphasis on the awareness of a potential external readership might assist the development of their weblog structure.

5.1.3 Stage 3: Reflective monologues

Stage 3 progressed the development of the weblog into a personalised writing and publishing platform. The focus of activities encouraged an expansion towards reflective writing and creating their self-representation as an online publisher in a learning environment.

The emerging themes shifted entirely at this stage with the only dominant theme being the process of reflection. There was an insignificant quantity of comments relating to the technology as participants focused on writing and publishing.

The process of reflection

Developing reflective writing that was publicly published was a new experience for the learners. Previous experiences had been limited to paper-based journal or essay writing and the learners reported a number of different approaches to what they understood by the reflective writing process.

> *I know that my posts/reflections will be all over the place, much like what's going on in my head. I am quite a reflective learner who generally prefers to sit back take it all in, process and analyse at my own pace and then apply. I do this all in my head without the urge to put it into print. So I find myself in unchartered waters... pushing myself to self reflect on virtual paper.* (Wkly/MetR/SPub)

The author of this weblog post is representative of many of the participants, using a writing-out-loud style while reflecting on the process. The comment is also representative of metacognitive processes that many of the participants displayed in their posts.

Other descriptions of the writing process included:

- Drafting in Word documents and reviewing before publishing to their weblog (which, at the time of the study, did not have drafting without publishing functions);

- Writing up case studies and readings on paper, then reviewing, summarising and publishing;

- Writing frequent brief notes on paper before reviewing and posting to weblog;

- Comments related to awareness of changing their style of writing – deeper thinking, shorter and more concise forms of outputs;

- Thinking about preparing to write; and

- Consideration of the title for the post to reflect the key substance of the post.

Sample comments included:

The use of a weblog forced me to use technology to record my thoughts and opinions, which was beneficial in making me start to build my skills. (Fnl/MetR/TechC+)

All the people in our class were experimenting and learning in the same way as I was, so we felt we could learn together and began writing differently. (Fnl/MetR/SPub)

The level of confidence in writing and posting opinions to their weblogs grew incrementally through Stage 3.

I liked the freedom of voicing your views, this encouraged me to learn more and speak more confidently about what I had learned. (/FnlMetR/SPub)

Writing publicly on my weblog required me to think differently… (Fnl/MetR/SPub)

The two sets of participant weblog posts above demonstrate metacognitive processes, and are representative of the style of writing about reflection that was evident across all participants.

Researcher's field notes

Throughout Stage 3 it was noted that there was very little need to provide technical support. The activities were drawing their attention to the processes of writing and there was a marked reduction in peer support required from technical MKOs (Vygotsky 1978). However, the sharing of writing and associated approaches was openly done by a new set of MKOs – a substantial shift in capability development aligned with the change of peer support.

The focal point of the learning environment, the nature of the posts, and the style of writing remained within the confines of the classroom. Although a few comments were noted about external readers and who might they be, the sharing of their weblogs appeared concentrated upon observing each other's attempts.

Through the Stage 3 activities metacognitive and reflective writing processes were developed by continual encouragement to post to their weblogs. The key observation made in the field notes related to how mastery was achieved in relatively short timeframes by those who posted to their weblogs frequently as contrasted by those who did only one post per week. The process of experimenting with writing styles also appeared to provide levels of confidence not experienced by those who contributed less frequently.

The pedagogical approach in Stage 3 transitioned to Baumgartner's (2004) Mode 3 and required less detailed instruction as the learners were starting to become more self-directed and personalised in their approach to the learning tasks. The comments function on their weblogs was used by the lecturer to encourage further contributions and sharing with others, while more personal feedback was sent through emails. The feedback loop at this stage, from both their peers and myself, established an ongoing expectancy of dialogue that the majority of students were unfamiliar with, but acknowledged as a valid source of motivation.

As my role shifted from the technical instructor towards Baumgartner's (2004) Mode 3 facilitator and guide, I was becoming aware that a greater portion of the educator's role was to extend the learners experiences to include a more external view of weblogs. The external weblog examples provided were being viewed as a single destination, similar to reading a static, single edition, printed academic journal. I needed to create the

perspective of a dynamic, constantly updated publishing environment. As we progressed to Stage 4 in the 5SPF, where the development of networks was central, I made a note to consider how to integrate my personal practices to demonstrate the value represented by this situation.

5.1.4 Stage 4: Reflective dialogues

The objective at Stage 4 of the 5SPF was to extend the development of the learners' networks through further development of their writing and by actively engaging with others as they started to develop DLNs.

As an important contextual point, it is timely to note that the phenomenon of public social networks, such as Facebook and Twitter, had not commenced at the time the study was conducted (see Chapter One, Figure 1.1, Timeline of social software). The concept of networking with social software was relatively unfamiliar across all students and subjects and required activities designed to introduce networking in an online environment that included searching for topics or people of interest, actions towards participating with others, and being able to find new connections to expand a network.

At this point in the 5SPF there was an increase in the anxiety levels of learners, which related not to the use of the technology but to how they could find and connect with others outside of the classroom cohort.

Developing networks

How the learners approached the tasks and their experiences can be represented by a hierarchical sequence: their understanding of the concept of building a network; their ability to locate a hub (or central point of reference); their ability to connect with others through commenting on weblogs; and their awareness of an external readership or audience for their weblog.

Concept of building a network

As mentioned above, the concept of online social networks and DLNs was unfamiliar to the majority of learners, consequently how to go about finding a network, engaging with people in that network and contributing to the network was challenging. They

appeared to be quite comfortable observing from the position as a reader across these distributed conversations; however, taking the next step seemed to impact the limits of their ZPDs (Vygotsky 1978) and levels of self-efficacy.

> *...it was more of a curiosity factor, seeing what they had written and comparing it to my own thoughts...* (Fnl/Ntwk/CF+/SPub)

> *It turns out, that a blog turns into something of a community...* (Wkly/Ntwk/CF+)

These two excerpts indicate an interest in the concept, in a positive way, but do not show immediate signs of taking action to actively engage. Lave and Wenger (1991) labelled this behaviour 'legitimate peripheral participation', frequently referred in contemporary social network terms as 'lurking'.

The concept of building a network was reinforced with Baran's (1964) distributed communications network diagram (see Figure 4.1 in Chapter Four) and further insight into the development of the concept can be directly related to the participants' visual representations (see Section 5.1.6 in this chapter).

Locating a hub

A number of activities within Stage 4 provided the learners with different methods to locate a hub or central reference point that could be used to further extend connections and locate a network of people. Based on the concept of locating networks through either a topic or person with a high profile (well connected), the learners approached the task in the following ways:

- Search – using Google as their central reference point to search for topics.
  Topics of interest did not necessarily identify people or networks. Over half of the learners struggled to progress beyond the static web pages of publications (journals, industry magazines, or software vendor sites).

- Locate a key person in a network.
  Some guidance was provided and previous weblog examples were also used. The key person, as a hub, then enabled the learners to identify others engaged with the key person.

- Locate a weblog search engine.

  A number of learners located a weblog search engine, but were frustrated by the process of identifying people and networks that were relevant. A search by topic listed names of people or their weblogs but required the learners to investigate further. This search process frustrated the learners who were expecting a more Google like experience and they abandoned the process in frustration.

These concepts are evident in the participants' visual representations in Section 5.1.6 in this chapter.

Commenting on other weblogs to participate in the network

Once a weblog of interest was discovered to engage further required the learners to either leave a comment on a post, or alternatively, write a post about the topic on their personal weblog, then using a trackback to notify the original author (see Chapter Two, Section 2.2.1 for explanation of this process). The anxiety levels reported from the learners related mainly to the fear of exposing themselves publicly on someone else's weblog or believing they didn't have anything valuable to contribute to the network.

> *...I wrote in one or two of these blogs, but felt I really didn't have anything to add.* (Fnl/Ntwk/Rel/SEff)

> *...I was frightened [to leave a comment] because I felt that I was not professional enough.* (Fnl/SEff/Ntwk/Rel)

> *The idea of people placing comments on weblog posts seems like a guestbook on a website – I don't get it.* (Wkly/CF-/SEff/Ntwk)

The participants' self-efficacy underpins their hesitation to engage, reflected in the excerpts from weblog posts above. The third quote, however, suggests a more negative attitude towards the use of weblog comment functionality. This appears to be influenced by an uninformed concept association with the passive process of signing a guest book or visitors page.

A number of learners did leave comments, but did not receive a response from the author, which quickly deterred them from making further comments. The researcher's field notes and the participants' weblog commentaries make clear that the understanding

of network protocols, or norms of behaviour, was under-developed in most of the learners. They spent little or no time reading across a number of the connections in the network they were attempting to engage with, and left comments with the expectation that every comment should receive a response.

Others reported technical difficulties, which prevented them from being able to leave comments on other weblogs. This is unlikely to have been the core reason for not contributing, as the commenting function was very straightforward and similar to adding a comment on a discussion forum in the LMS, a practice they were familiar with and had used regularly.

> *I tried to reply to some but there were technical problems… this kind of put me off to replying to others.* (Fnl/TechC-/SEff/Ntwk)

A small segment of learners were more frank with their reported actions at this stage and were openly content with creating or replicating network behaviour within their classroom cohort. These actions could also be viewed as practising and modelling behaviours before extending to external networks.

> *I think we were all a tad afraid to venture out into the blogosphere where strangers lurk, so we decided to attempt to send each other comments.* (Wkly/Ntwk/SPub/SEff)

The learners who actively engaged with external weblogs reported the benefits and personal rewards they gained with increasing participation.

> *It was hugely addictive – writing comments on other people's blogs outside of the class group – suddenly you wanted to have a say about all kinds of things on peoples blogs.* (Fnl/Ntwk/Em+/SPub)

Awareness of the reader – writing for a reader

The learners who actively engaged with external weblogs reported a shift in perspective when viewing their own weblogs.

> *…I liked the ability to add pictures – it breaks up the blog to make it easier for others to read, and it's fun to search for pictures to relate to the topic, makes it more personal.* (Fnl/Ntwk/SPub)

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...at times I really had to step back and think about what a reader would see if visiting my weblog... (Fnl/Ntwk/SPub)

Being able to view other people's blogs, gave me the idea of how to write and how to express my views in a short and comprehensive manner. (Fnl/MetaR/Ntwk/SPub)

The quotes above additionally illustrate the level of positive engagement with the process of self-publishing as the learners begin to explore the potential for using their weblogs as a communication tool with their readers.

Self-efficacy

A number of activities in Stage 4 included approaches for both locating topics or other people of interest to connect with as steps to creating a DLN. Different types of methods for connecting with others through online platforms were discussed, but for a significant number this concept was new and confronting, illustrated by their comments that directly related to levels of self-efficacy for achieving these tasks.

I still feel a little reserved about adding comments or updating my blog in case the others do not like what I say and or what I say was pointless or of little value to the project. I have to learn to get my head around this and not care what others will think, to an extent. (Wkly/SEff/SPub)

I felt a bit intimidated because all the other blog authors were eLearning practitioners and I didn't feel confident enough to comment on their blogs. (Fnl/SEff/SPub)

Their perspective frequently represented the expressions of self-doubt as students to contribute useful comments.

Researcher's field notes

At Stage 4 in the 5SPF there was a division of approaches that became evident through the learners' ability to identify or locate an external network to engage with. The experiences reported above indicate the variation while my notes explored strategies to provide further assistance to those who were struggling with, firstly, the concept of

online social networks, but also, secondly, with the process of participating with others beyond their classmates.

At this stage, those who found connecting online with others unintimidating achieved the tasks in Stage 4 without any difficulty. Notably, although others were keen to participate and observed how these connections were being made, their self-efficacy and lack of confidence in self-representation inhibited them taking action.

The use of peer support and MKOs (Vygotsky 1978) altered markedly in Stage 4. Where previously peer MKOs were valued advisors, in Stage 4 their open sharing of how they approached the development of their DLN was observed by those with less confidence, but not used as support to gain alternative methods for approaching tasks.

When learners were struggling and indicating their reluctance to manifest their participation in the network through contributing to others, technology challenges were used as the reason for lack of task completion. It became evident that the boundaries of their ZPDs (Vygotsky 1978) were reached and their lack of self-efficacy limited their actions.

My field notes highlighted a number of comments about wanting to observe, or be spectators, of a network, but a strong resistance to participate in any way. At this point, my role of educator could quickly have regressed to Baumgartner's (2004) Mode 1 or 2, in an attempt to enable the learners to progress. However, I recognised the value to remain in Mode 3 and provide further guidance. Connecting with networks on behalf of the learners was not going to resolve their issues; it would only reinforce dependence on me, as their MKO.

At this point I noted the potential inadequacy of Baumgartner's (2004) Mode 3 approach. There was a need for an expanded mind-set to include a network-thinking approach that supported the learners developing their own personalised DLNs, while being able to provide pathways and introductions within a variety of networks. I likened the strategic process to one of a host at a face-to-face networking function – not necessarily knowing everyone, but being able to confidently introduce others and connect to those with similar interests. The data at this stage was already highlighting the need for a reconceptualisation of the role of the teacher as a 'Connected Educator' and this is taken up and explained in detail in Section 5.3.4 in this chapter.

5.1.5 Stage 5: Distributed knowledge artefacts

The final stage in the 5SPF focuses further on active network participation through intentional collaboration, sharing, and distribution of knowledge. Within this stage, the learners who had commenced a level of engagement within a network in Stage 4 required limited guidance and became committed participants. In contrast, the learners who had struggled in Stage 4 relapsed in some aspects of participation, focusing mainly on actively contributing within their class networks, but making no further attempts to extend beyond those boundaries.

The overall participation and sentiment in Stage 5 remained positive, with differing levels of achievement in terms of the creation of a DLN. The themes reported through this stage reflect the types of changes in attitude towards their experiences expressed by the participants, including: building relationships, sharing knowing and collaborative learning, and restructuring their weblogs.

> *While I am really looking forward to finishing the diploma, it is going to be sad because it is unlikely that we will all get together to learn like this again, unless there is another course to attend at a later date or we can keep this software going.* (Fnl/Ntwk/Rel)

The participant's weblog post above represents the positive attitude towards engaging with others in a DLN and identifies the potential loss of future learning activities of this nature.

Relationships

There was recognition at this stage that the building of relationships was pivotal to the establishment of a DLN. The variation in experience ranged from sharing knowledge to build a relationship, through to recognition that just adding a comment on someone else's weblog was not sufficient to build a meaningful relationship, to the awareness that building a network relationship requires time and effort.

> *By helping others I was actually helping myself by providing answers to questions that I hadn't considered before.* (Fnl/MKO/Rel/CLKS)

...what a liberating feeling to put your thoughts out there and discuss them with cyber friends. (Wkly/Rel/Ntwk)

The time allocated for social networks, was not enough time to build relationships with other bloggers. (Fnl/Rel/Ntwk)

The range of relationship awareness expressed by the participants can be noted in these excerpts.

Sharing knowledge and collaborative learning

The majority of learners described the impact of sharing knowledge and resources as a rewarding process that assisted their development of knowledge. Additionally, a significant portion of learners reported benefiting from the feedback loop with their peers as publishing of work encouraged giving and receiving support and increased connectivity they had not experienced in other learning contexts.

As I keep using my blog I will eventually gain more information – as more comments get added to my blog, I will begin to see it becoming an area where information is shared and built upon. (Fnl/CLKS/Ntwk)

I used my networks as a source of information, reading what was going on but choosing not to comment. (Fnl/CLKS/Ntwk)

A contrast of approaches to sharing knowledge illustrates how participants were gaining awareness of the processes for collaborative learning. The second comment represents the under-developed network concept of passive participation, while the author of the first comment has received feedback and is beginning to understand the value of meaningful interactions (Woo & Reeves 2007).

Weblog structure revisited

Stage 5 provided the learners with a final step in the synthesising and consolidation of concepts that had been introduced in the earlier stages of the 5SPF. There were a substantial number of comments that related to the structure of their weblog and indications of how the structure had supported learning. Only a few connected the structure to their readers, as illustrated by the comment below; most focused on their personal information management.

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I renamed and re-organised everything to assist my readers… (Fnl/CF+/SPub/Ntwk)

Researcher's field notes

Stage 5 felt like a time of revelation for the majority of learners where concepts were visible in application and active participation built feedback loops and motivation for further use of their weblogs, synthesising Bandura's observational learning model and aspects of self-efficacy (1977a, 1977b, 1986, 1997) with Vygotsky's (1978) collaborative, socially constructed learning theories. However, as their educator, it was apparent to me that a lack of time had negatively impacted on a minority of participants. This was especially true for those whose perceptions of self-publishing and ability to correlate this with developing networks had only finally formed in the last couple of weeks of the subject as they became aware of the potential of participation in a DLN and associated processes through the observation of others as they developed DLNs.

My field notes highlighted a change in the perspective manifested in the participants' weblogs. They had become aware that their weblogs and DLNs had evolved as more holistic learning environments. This was a place where they connected with other people and intentionally shared their learning experiences and organised their own learning. Their weblog and DLN was no longer seen as a piece of software that provided productivity gains or a means of completing tasks (like the LMS or a Word document). It had become a stimulating environment, a space where learners were engaged in varying levels of participation. The MKOs were a critical element in the final architecture of this environment, but this was not at the expense of the community that had developed with their peers. The cohesion amongst learners in the weblog network was not the same as I had experienced in asynchronous discussion forums in the university's LMS or the classroom. The data showed the relationships were more respectful of opinions, and more inquiring of the diversity in their network. In contrast with the cliques and small groups that form in physical classroom settings, the barriers for exchange of ideas and methods/approaches to learning tasks were actively sought after without limitations observed in face-to-face environments with existing social group constructs.

The role of the MKOs (Vygotsky 1978) shifted from providing assistance to becoming a respected and central part of participants' networks, where opinions and references

were shared and extended further than the parameters of the subject materials. In more than a third of participants, the shift included MKOs that were external to their subject cohort and the university, further extending their participation with a diverse range of opinions. For the participants who did not broaden their DLNs beyond the class group, there was evidence of Lave and Wenger's (1991) legitimate peripheral participation (see Chapter Three, Section 3.2.1.3) of those participants whose network was extended, in both weblog comments and classroom discussions.

The interest in restructuring their weblogs to more fully utilise the functionality, in particular the use of categories for organising content, appeared to be demonstrating a synthesising of concepts into practical application. This emerged not necessarily in a cognitive scaffolding process, but from a more personal information management perspective with an external focus to provide guidance for their readers.

The types of activities that could be characterised as movement of the learners through their ZPD (Vygotsky 1978) were not evident during this stage. It became apparent that most learners had now expanded to the limit that was achievable in the scope of the subject context and timeframes, or were not willing to explore beyond the subject requirements.

An additional point to note that goes beyond the scope of the research questions but was evident in the data was that approximately one third of participants continued to use their weblog throughout their studies and in a few instances, have continued to use blogging (and new technologies such as Twitter) to expand their networks and stay connected with their classmates but also with me as a practitioner. A diverse network has developed across the range of subject participants and subsequent subject participants who did not participate in the research project but have become engaged in the network that has been initiated by research participants.

5.1.6 Visual representation of their network

The research participants were asked, as part of their final assessment task, to provide a visual representation of their network with the objective of identifying their mental models: how they understood the way in which they connected to others, who was an

influential or key person that provided connections to others (or a hub), and whether by using the visual representation they were able to more effectively explain their experience of learning in a DLN (see Chapter Four, Section 4.4.5, Participant's visualisation of their network).

Notwithstanding the pedagogical activities, almost two thirds of the research participants struggled to visually represent their network. The other third avoided the visual activity by writing awkward descriptions outlining web-based search processes and the inability to locate other people in relevant networks.

The inability to visually represent or conceptualise their network was evident among approximately one third of the participants, who had also struggled in Stage 4 and 5 of the 5SPF and not been able to fully achieve a DLN that extended beyond their classroom cohort.

Visual representations were intended to reveal the mental models the learners were using to develop a framework for understanding the online network concept (Hyerle 1996). The range of clarity and certainty apparent in the visual representation activity correlated with the stages of development against the concept of their network formation. The participants who actively participated in their DLNs appeared to have more sophisticated concept formation and had little difficulty with the task. The participants who were struggling to develop a network did not appear to have a mental model which enabled them to identify the patterns and connections in their network. However, the ability to develop visual representations could be related to the learners' capabilities arising from lack of experience with the concepts in meaningful contexts (Vygotsky 1986).

A distinct series of patterns emerged from the visual representations submitted, which have been grouped into four categories, based upon the participant's view of their network and related to Baran's (1964) three types of networks (see Chapter Four, Figure 4.1): the learner as the central hub of their network; a search engine as the central hub of their network; an MKO or an influential individual as the central hub of their network; and no central hub, a totally decentralised network.

Each category will be described against the stages of perception: selection, organisation, and interpretation (Hortin 1994), while comparing the network representation to Baran's

(1964) distributed communication networks. Finally, Marton and Booth's (1997) structural and referential aspects of learning that are used to describe the process of determining elements in our environment, the external and internal horizon, will be used to describe how the learners perceived their role in the network. See Chapter Four, Section 4.5.2 for details of the data analysis approach.

The four categories of variation in network representation are outlined below:

- **The learner as the central hub of their network**.

  Type 1: A number of research participants visualised themselves as the central hub in their network, indicating the priority of personal or self-focus that is similar in structure to a centralised network.

  This group have an internal horizon that is focused on how they are connected to others, but without an awareness of the potential interconnectedness or relation-ships between others in their broader network.

  They have identified a simple pattern of connections from themselves to others, but have not yet fully formed the concept of a network to progress to the interpretation stage of perception. See Figure 5.2 below as an example.
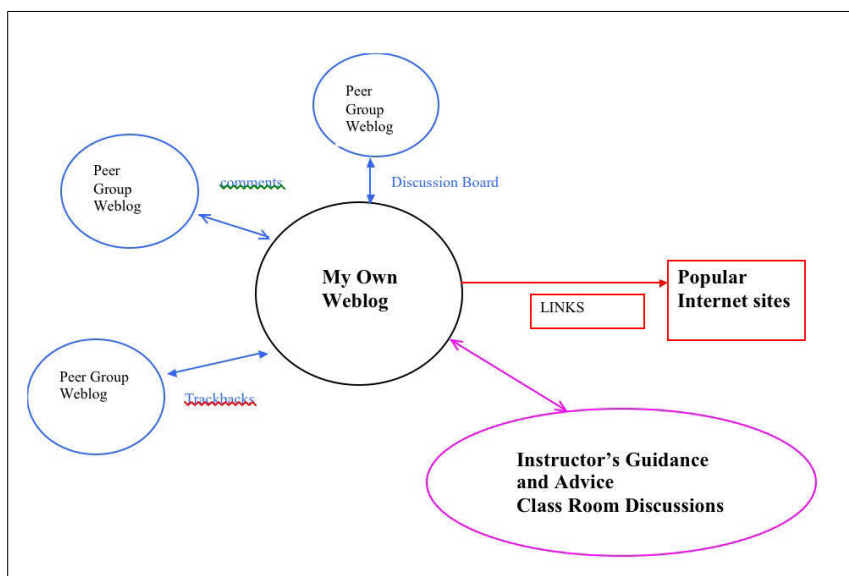
Figure 5.2: Sample participant visual representation depicting a centralised network with internal horizon

- **Type 2:** In contrast with Type 1, the example below in Figure 5.3 demonstrates progression of concept formation to interpretation in the stages of perception that represents a decentralised network with the participant as the central hub but also including a number of additional hubs that are interconnected across their network.

The external horizon is illustrated by the awareness of relationships within the network and across a hierarchy that was applied to more than one hub as a point of interconnectedness.

The nature of this type of network is being supported by advocates of personal learning environments (PLEs) – see Section 2.2.3 in Chapter Two.
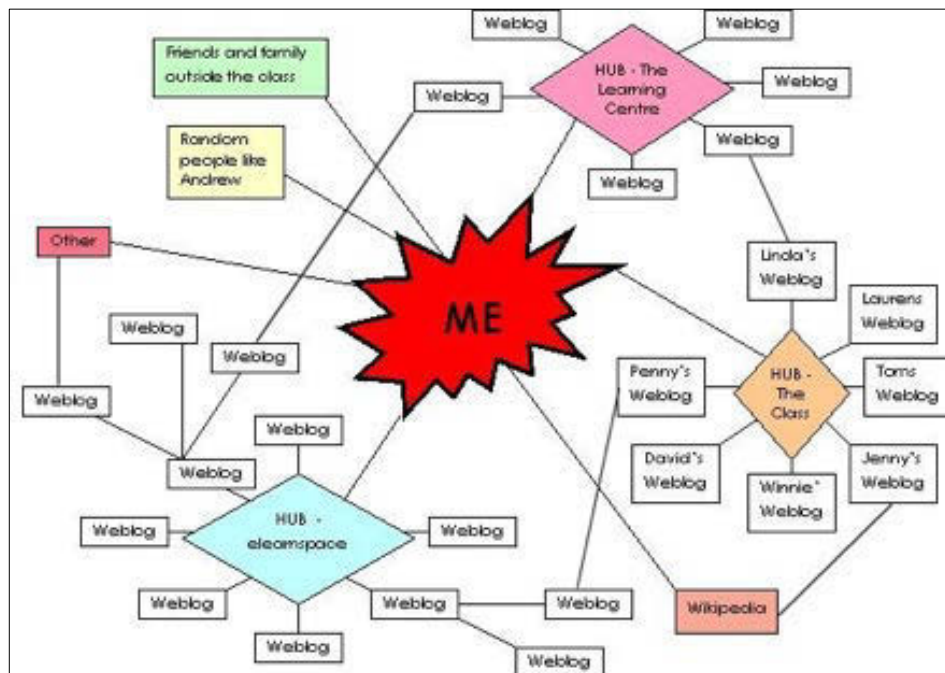
Figure 5.3: Sample participant visual representation depicting a decentralised network with external horizon

- **A search engine as the central hub of their network**

More than a third of participants indicated that a reference site, such as the university library or a search engine, for example Google, was the central hub for their network; see Figure 5.4 below for an example.

This approach indicated a lack of appreciation that a DLN was constructed of people, not inanimate web sites and correlated with the learners who had

struggled to find people or participate in a network at Stage 4 and 5 of the 5SPF. It could also be interpreted that search engines, such as Google, are becoming anthropomorphic, or as being seen as a collection or access point to others by means of search.

The participants' visual representations could be interpreted as either the centralised network (Figure 4.1) with the key reference sites as the central hub, or decentralised networks (Figure 4.1) with more than one reference site as their hubs.

In terms of their stages of perception, it could be argued that the formation of a mental model of their DLN is at the organisation stage. However, the overall concept of DLNs as a network of people, connected through topics of interest or commonality, could indicate that their stage of perception remains at the early selection phase where their attention is drawn towards traditional resource or reference connections, not people.

Their horizon is internally focused, where the object of learning is about finding resource materials to achieve a learning task.
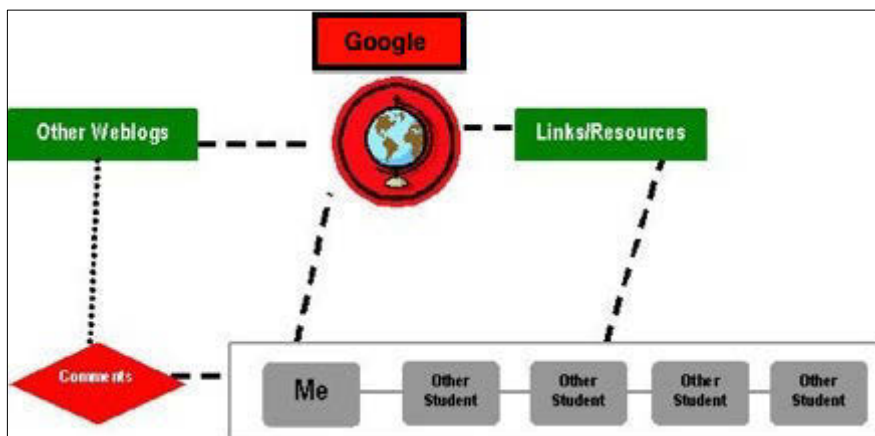
Figure 5.4: Sample participant visual representation depicting an unformed centralised network

- **A MKO or an influential individual as the central hub of their network**
  Participants identifying an MKO as their central hub had adopted either a
  centralised (Figure 4.1) or decentralised (Figure 4.1) network that represented a

dependence on or deference to an individual as the point of reference for finding, connecting, and participating with others in their network.

The horizon varied across the network representations with a small percentage, as in the example below in Figure 5.5, showing a partial internal/external horizon where the MKO is viewed as a gateway to connect with others, demonstrating an external horizon. Yet, the relationship of the connections between MKOs or their connections was not always apparent, indicating an internal horizon that focused on using the MKO to achieve a learning task, rather than the MKO as an interconnected participant in a greater networked environment.

The level achieved in the stages of perception predominantly remained in the organisation stage with indications of pattern recognition, but not fully developed concepts that signified the relationships within their network, similar to the development of their horizon.
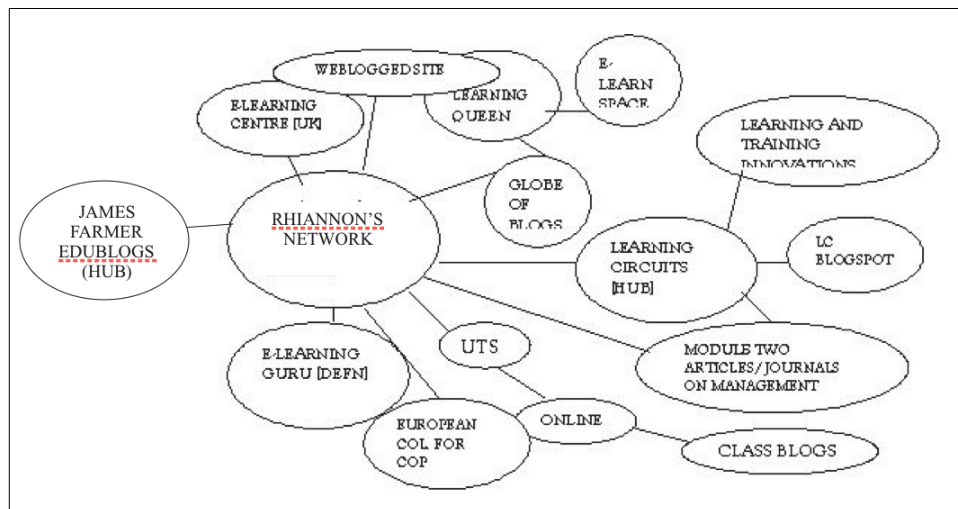
Figure 5.5: Sample participant visual representation depicting a decentralised network with partial internal/external horizon

- **No central hub, a totally decentralised network**

  Interestingly, only two participants represented their networks without a central hub indicating the limited number of research participants who had a fully developed concept of their network. However, the category of 'learner as the central hub of their network' Type 2 example does closely align with this category and a developed understanding of network relationships.

In the example below, Figure 5.6, the learner has demonstrated the use of MKOs as key hubs, but has additionally recognised how they are interconnected across other members of their network. The external horizon has integrated the relationships with the whole environment, while identifying their university connections as a sub-set of the overall network.

The interpretation stage of perception of this example demonstrates how the concept of network connections has been identified, re-used and re-defined. Through exploration of the interconnectedness of their network members, that is, who is connected to whom, the learner has identified more than one hub, or centrally connected person, who is also connected to others in their network. This has provided insight into how the learner created connections and cross-referenced to others, additionally revealing their use of patterns in the organisation phase to give context to their network.
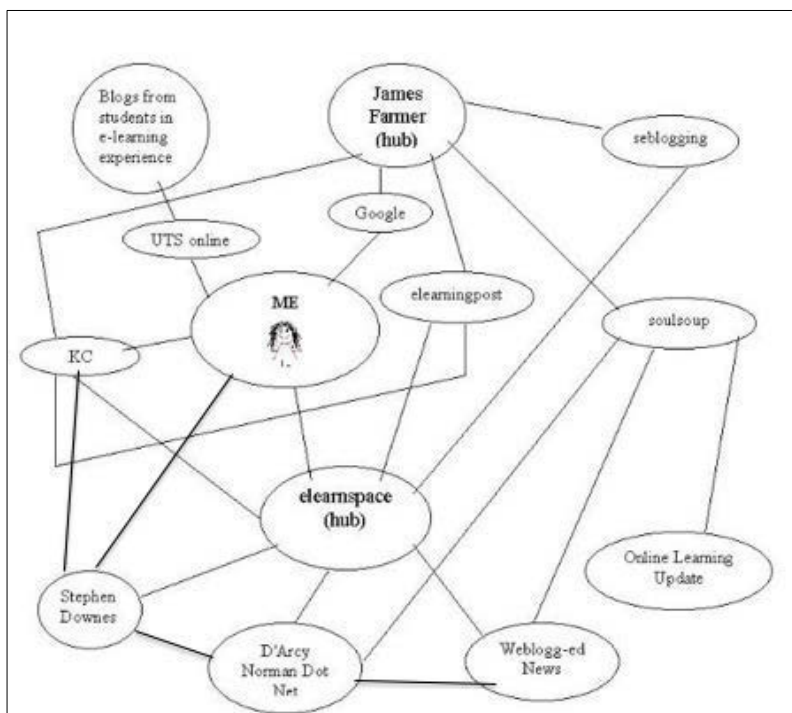
Figure 5.6: Sample participant visual representation depicting a decentralised network

Summary

The visual representations have contributed an alternative insight into the research participants' experiences of developing their DLNs. Significantly, their level of concept

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development regarding an online social network and the perspective of their role and approach to finding, connecting, and participating in a DLN has revealed variations that can inform pedagogical strategies.

The categories from the analysis of the visual representations were taken into account in the second iteration of analysis to develop the phenomenographic categories of description; see Part 2, Section 5.2 in this chapter.

5.1.7 RQ3: Overall Experience

Whereas the first two research questions focused on the participants' approaches to developing learning networks, research question 3 shifted the focus of the inquiry towards understanding the participants' overall experience of learning in an online self-publishing context. Data relating to this question was collected from the participants' written responses at the end of the subject, the researcher's field notes, and a quantitative comparison was made against the Student Feedback Results for 2004 versus 2005 when the study was conducted. See Chapter Four, Section 4.5 for details of data types.

The data collected from the participants' written response was analysed on their weblogs, as previously completed for RQ1 and RQ2. It was, however, reviewed as a separate task, after the completion of data analysis for RQ1 and RQ2. The phenomenographic method of analysis was applied to the responses to extract themes relating directly to RQ3 with the analysis revealing the following categories: the overall technical experiences; the experience of the reflective writing processes; the effects of publishing their work publicly; the personal structuring of learning or information management; the experience of knowledge sharing and collaborative learning; and the experience of developing a DLN.

The categories that emerged from the RQ3 analysis revealed well-formed awareness of their learning experiences, which in most instances have been contrasted with their experiences of traditional learning contexts. The participants comprehensively displayed critical reflection and metacognitive awareness when describing their overall learning experiences, which they supported with examples from their weblogs.

Technical experiences

The small number of learners who struggled to develop a DLN in Stages 4 and 5 of the 5SPF made comments relating to their overall experiences with the technology aspects of learning by holding the technology responsible for their difficulties. These participants, while distinctly frustrated by the technology aspects, were unable to find strategies to address their challenges, and appear to have allowed this to obstruct their overall learning and progress, as demonstrated by the two weblog excerpts below:

> *I would have to say I struggled with this subject – I had a lot of technical issues to overcome and sort of lost the motivation.* (Fnl/TechC-/SEff)

> *I was never able to get to grips with the technology* (Fnl/TechC-/SEff)

In contrast, as shown in the comment below, a significant number of participants described the support from MKOs that enabled their technology challenges to be overcome.

> *…when I felt frustrated…without the support from my colleagues during that period, I don't think I could have survived!* (Fnl/MKO)

Insufficient levels of self-efficacy apparent in the first two comments has produced a degree of helplessness where the learners have not been able to develop strategies to overcome their challenges. Alternatively, the value of MKOs has been commented upon throughout the data relating to technology support, as indicated in the third comment, as an effective strategy for managing challenges.

Reflective writing

A variety of comments related to the writing processes, with the majority being similar to those reported in the findings at Stage 3 and 4 for RQ1 and 2. Overall, as a learning experience, their perspectives indicated a level of deeper thinking based upon taking ownership and responsibility of their work being publicly visible. This theme was reiterated below in the publicly publishing category.

> *Yes – it enhanced my learning – writing my blog forced me to think about things in ways that I haven't before, even more so when I was reading an article or a site.* (Fnl/MetR/SPub)

Effect of publicly publishing

A significant portion of the research participants specifically highlighted the effects of publicly publishing their work regularly, at least once a week, from other experiences that related either to learning processes or the technology. The quotes from participants' weblogs below reveal the participants' awareness of a broader range of readers for their work and assessment tasks, other than traditional approaches that typically include a subject lecturer and possibly a few classmates. The impact of the increased exposure was reported positively across all comments and all refer to additional efforts to consider more deeply what they were writing, or describe the process of thinking more deeply having a longer term influence on their level of learning and engagement with the subject topics. Their openness to disclosing their metacognitive processes was another commonly occurring theme representative of the participants' overall learning experiences, as can be seen in the comments below.

> *I think adding things online for people to see forces you to put a bit more effort into what you're doing…* (Fnl/MetR/SPub)

> *what I learnt about using the blog has stuck in my head longer because I created it.* (Fnl/MetR/SPub)

> *I found that I would focus more on blogging than doing work in my other subjects – it kept me motivated.* (Fnl/SPub/SEff)

Additionally, as the quote below indicates, the ownership of work being publicly displayed had a positive effect on their approach to the learning tasks.

> *The ability to create the weblog, that is to turn the concepts into actions, and use them to create an actual weblog enhanced my learning by allowing me to apply the knowledge that I had gained.* (Fnl/MetR/SPub)

Structured learning

A range of responses referred to the use of the weblog to create structure to their learning, while others commented on becoming more self-directed. A small number, as mentioned above in Stage 5 findings to RQ1 and 2, reviewed how they had initially set-up their weblogs and made changes to the structure. While a significant number based

the structure on their personal organisation of information, others based the structure on a readers' perspective. These comments relate to both reflective learning and publicly publishing themes in so far as the actions required to publish and manage content related to their learning on weblogs, which had an impact on their overall learning experiences.

Although the terminology used by the participants refers to the structure of their learning, in the context of their responses it does not relate to the scaffolding of their concept development. It appears to be intended to represent their approaches and tactics for learning and the use of tools, such as the weblog, to organise their thoughts. In a number of ways, it manifests as being connected with learning strategies and behaviours described by Bandura (1977a, 1997) as self-regulation.

Self-regulation strategies (Bandura 1977a, 1997; Bandura & Jourden 1991; Zimmerman, Bandura & Martinez-Pons 1992; Zimmerman & Schunk 2011) were not addressed by the 5SPF but the relationship between self-efficacy and motivation could now, based on the comments from the research findings, be incorporated as an intentional outcome at Stage 5 for creating ongoing, sustainable actions for learners to continue participating in their DLN beyond the range of a single subject.

> *...using a weblog has been an amazing way to structure one's learning.* (Fnl/MetR/SPub)

> *...the weblog guided the way I was learning. It just held my hand and I had to do all the thinking.* (Fnl/MetR/SPub)

> *It increased my responsibility for my own learning by becoming more self-directed.* (Fnl/MetR/SEff)

As emphasised by the three participants above, the act of self-publishing to their weblogs, while providing a structured framework for their learning, has led to explicit comments with the potential to generate self-regulatory behaviours.

Sharing knowledge and collaborative learning

Sharing knowledge and collaborative learning as a category could be incorporated with the previous categories: reflecting writing, effect of publicly publishing, and structured

learning; however, the subtle distinction that emerged from participants was the focus on sharing their work and knowledge, learning together in a different manner to their previous experiences, and the effects on their overall approach to learning tasks.

The awareness of readers, within the subject cohort or beyond, was included in this category as it specifically identified the feedback loop that was present when their weblog posts received comments.

On the whole, there was a collaborative mind-set that developed and even for those learners who struggled initially, the experience was reported in terms of increased motivation, deeper learning approaches, and support from others, contributing additional evidence of self-efficacy.

> *...share knowledge from every point of view and from a stand point which encourages thinking.* (Fnl/CLKS/SPub)

> *I can't deny that the process has been hard and sometimes confusing but the result satisfies me because the learning has been gradual and constant and collaborative.* (Fnl/CF/CL)

> *This particular way of learning is fascinating, entertaining, interesting as well as just a whole new approach to the way we can learn together.* (Fnl/CL)

> *When having people watching, evaluating and commenting on your work, you are going to put more effort in.* (Fnl/CL/SPub/Ntwk)

> *...the nature of continual posting work on blogs not only instigates the process of continual learning, but the process of knowledge sharing – the process of knowledge sharing promotes a far better understanding than a conventional essay assignment.* (Fnl/CLKS/SPub)

Evident in the above quotes from participants is the implicit value they have experienced by engaging in the collaborative approach to learning. Although not specifically mentioned in the data, all participants had previous experience with asynchronous discussion forums within the university LMS, where shared knowledge and collaboration can be achieved. However, the point of departure manifests itself in

their personal responsibility or ownership of the weblog and their perception of the learning experience.

Developing a DLN

The overall experience of developing and learning in a DLN was reported by all participants as having enhanced their learning experiences. These comments were validated through the quantitative results in the SFS; see Section 5.1.8 in this chapter.

It was gratifying, as their educator, to read comments that indicated their unexpected delight when they connected with others. There is a link in this positively expressed reaction to self-efficacy and motivation that contributed to their levels of participation; see comment below.

> *I am astounded that people are reading my weblog and feel they want to share their experiences.* (Fnl/Ntwk/Rel)

Even for those who did not fully achieve a DLN but remained within their class cohort, the reported experience had a similar effect. Furthermore, the connections with others led to comments that related to experiencing a diverse range of views. This appears to have been a novel experience for the majority, who may previously had constrained their topic research to reading lists provided within the prescribed subject materials.

> *As I keep using my blog I will eventually gain more information – as more comments get added to my blog, I will begin to see it becoming an area where information is shared and built upon.* (Fnl/CLKS/Ntwk)

> *…my network functioned as a knowledge development group – signposting/linking me to other research areas I could be interested in.* (Fnl/Ntwk/CLKS)

> *Participating in a network is a way to expand knowledge and share experiences from many perspectives.* (Fnl/Ntwk/CLKS)

As highlighted by the three comments above, there was acknowledgement of the networked learning process being continual and growing as they not only contribute, but also receive feedback from others.

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Self-efficacy and motivation are apparent in their comments and, as noted above, tend towards self-regulatory behaviours, although this casual link would benefit from further future research (see Chapter Six, Section 6.2. The two participant weblog excerpts below can evidence this:

> *...it brings about confidence and helps to reflect upon issues in a different way. It opens up a dialogue and prevents you from isolation.* (Fnl/Ntwk/SEff/CL)

> *Usually I need to drive myself HARD to study, while in this subject I just want to go and visit my own weblog and others' weblogs almost everyday to see something new.* (Fnl/Ntwk/CLKS)

However, the participants were explicit about the initial struggles with their concept development of learning and participating in a DLN. These comments were also evident in the visual representations of their networks; see Section 5.1.6 in this chapter.

> *I think that if I had had a clearer understanding of this [network formation] in the first half of the semester I would have been able to build a better network.* (Fnl/CF-/Ntwk)

> *At the beginning of the semester, I was totally lost, I even thought of quitting this subject. How lucky I changed my mind!! And now my husband says I'm an 'addicted blogger'.* (Fnl/CF+/Ntwk/SPub)

Although neither of the weblog posts above mentioned their strategies to overcome their challenges, it is indicative of the group of participants (approximately one third) who only developed an understanding of the network concepts in the last weeks of the subject. Arguably, this experience could be more mature in the contemporary education landscape with the likelihood of networking being a more familiar concept.

Researcher's field notes

Of significance at this stage of analysis was the depth and quality of data contained in the participants' written responses. It was noted that having conducted an initial scan of data on the participants' weblogs, the need for further face-to-face interviews for clarification or expansion of details would not be necessary. It was evident that the written responses directly reflected genuine thoughts and feelings of participants that

may not have been expressed to me, as their lecturer and the researcher, in a face-to-face interview. Additionally, the use of hyperlinks to connect their comments to posts made throughout the semester illustrated the process of returning to reflect upon their experiences over the period of time during the subject. Specific examples were hyperlinked to provide context for the reader, but also indicated the extent of review and reflection that had taken place. This would not be possible in an interview that occurred at a single point in time, typically at the end of the experience where recalling how the processes had been performed or how they were experienced would be difficult to do accurately. (See Chapter Four, Section 4.3.1, Qualitative internet inquiry, and Section 4.5.1, Participant's written response for initial rationale to select the data types.)

5.1.8 Student Feedback Survey Results

The results from the Student Feedback Surveys (SFS) were examined to determine if the overall learning experience in the participants' final written response varied noticeably with the SFS responses. The results, collated and analysed by the university, were also compared with the same subject conducted in 2004. See Chapter Four, Section 4.5.6 for full details of the SFS data type and analysis.

Two questions on the SFS related directly to RQ3 and the results are collated and outlined in Table 5.2 and Table 5.3. The results for the subject are compared against both the faculty and the university as a whole to provide a contextual benchmark.

Table 5.2   Question: *My learning experiences in this subject were interesting and thought provoking.*

Whole of university – mean of all subjects	Whole of faculty – mean of all faculty subjects	Whole of subject – mean subject score
2004 mean score: 3.7	**2004** mean score: 4.0	**2004** mean score: 3.9 24% strongly agree 47% agree 29% neutral
2005 mean score: 3.8	**2005** mean score: 4.1	**2005** mean score 4.8 80% strongly agree 20% agree

Table 5.3 Question: *Overall I am satisfied with the quality of this subject.*

Whole of university	Whole of faculty	Whole of subject
2004 mean score: 3.7	**2004** mean score: 4.0	**2004** mean score: 4.2 32% strongly agree 58% agree 11% neutral
2005 mean score: 4.0	**2005** mean score: 4.3	**2005** mean score 4.7 70% strongly agree 30% agree

In both instances, the results for 2005 indicate a marked improvement of both learning experiences and overall subject satisfaction against the results for 2004. The quantitative results align with the participants' written responses regarding their overall learning experiences, with all research participants stating that publishing publicly on their weblogs had enhanced their overall learning experiences.

Additionally, a distinction between 2004 and 2005 is the positive increase in ratings. In 2004, although the subject content was the same, an earlier version of the 5SPF had been used (see Chapter Three, Part 1), prior to this research study being conducted. The fundamental adjustments made to the 5SPF, prior to the subject being taught in 2005, have become evident as critical factors that improved the learning experience for the participants. These differences have been noted in the findings reported against the stages in the 5SPF for RQ1 and 2, in the above sections.

5.1.9 Summary of first iteration of data analysis

The phenomenographic analysis process was applied to the first iteration of data analysis, which reviewed all the data types (see Figure 5.1) to produce a rich source of recurring themes across the group as a collective.

The findings directly related to RQ1 and RQ2, i.e. how the participants approach the learning tasks, and what strategies they used to achieve these tasks, were reported against each stage of the 5SPF and provided insight into the pedagogical strategies required to provide learners with a framework for the effective implementation of social software. The ability to analyse the weblogs in an online environment provided an insight into the use of hyperlinks and a sense of connectedness that was experienced by the learners. Additionally, the visual representations revealed the variation in levels of concept formation and the learners' understanding of their network relationships.

The analysis of data that addressed the overall experience of learning in a DLN, related to RQ3, provided further insight into the learners' experiences and expanded on themes that were identified in connection with RQ1 and RQ2, while the SFS results validated the participants' comments in their final written responses relating to their overall learning experience.

Notably, from a data quality perspective, the diverse range of data collected across a period of time afforded the researcher the ability to interact with the data on their weblogs in a manner that cannot be achieved by reviewing transcripts of interviews. Of significance was the learners' review of their weblog commentary throughout the semester to reflect upon their experiences and report this in their final written response (including the hyperlinks to their earlier comments to illustrate their point). Arguably, an interview conducted at the end of the research period would not have achieved the depth or accuracy of recall established by this process.

The recurring themes that emerged from the first iteration of data provided the fundamental elements that were used in the second iteration of data analysis to establish the phenomenographic categories of description, as outlined in Part 2 of this chapter.

Part 2: Categories of Description

5.2 Introduction

The second iteration of the data analysis reviewed the themes revealed during the first iteration and applied the phenomenographic method of developing categories of description that included a structural relationship linking the categories and the variety in approaches of the learners (Marton & Booth 1997).

The emphasis of analysis was on viewing the transcripts as a collective experience. The analysis process for this second iteration of data involved reviewing the groups of data within a theme and similar themes to determine the context and significance of the theme. A refined set of themes included notes and questions about the key issues within the emerging category of description. The next step reviewed the dimensions of

variation across the different groupings of themes, establishing points of distinction or similarity.

The logical relationship between the categories of description then focused on the structure indicated in the data and my professional judgement of pedagogically significant variation, as a researcher and educator, which can be used to inform pedagogical practices.

The result of this analysis process revealed five categories of description for the ways the students experienced the development of DLNs. The categories determined do not attempt to signify every nuance of individual experience recorded in the transcripts; rather they represent the pedagogically critical aspects. They are hierarchically related through the acts and objects of development and participation and are represented below in order from simplest to most complex:

- *Category A*: Developing a network is constrained by what the technology can do and how it is used.

- *Category B*: Developing a network is conditional on creating an engaging online self-representation.

- *Category C*: Developing a network is reliant upon proficient writing – having opinions and being able to articulate them.

- *Category D*: Developing a network is about discovering others in similar fields of interest.

- *Category E*: Developing a network is about active participation, reading, writing and exchanging opinions.

Outlined below is an explanation for each category illustrated with quotes from the research participants' posts on their weblogs.

5.2.1 Category A: Developing a network is constrained by what the technology can do and how it is used.

In this category, learning and developing networks was described by focusing on the technology and the learners' ability to use and incorporate the functionality of the software. Participants portrayed the technology as being in control and the ability to understand the structural concepts and gain proficiency dominated the learners' descriptions.

> *I think the weblog has held me back in some ways, I was unable to develop a network until the last week and so felt frustrated by the system for some time – I also had many little technical problems with the weblog, which further frustrated me and put me off over the semester.* (Fnl/TechC-/Ntwk/Em-)

The technology was the object of focus, while the participant, by their own admission, has been unable to develop learning strategies to take control of their technology challenges.

> *...when I went to try to comment it would not let me and I could not see anywhere to comment on his site. So although I understand the concept of networks, which is where you are in a network with other people and you make comments and reference to other peoples weblogs and they comment or reference back. I was unable to join a network, as I do not understand how to ping or backtrack – I just do not understand the concept of pinging and backtracking.* (Fnl/TechCh/CF/Ntwk)

This weblog excerpt, made at the end of the semester as part of the participant's written response, uncovers a lack of technical capability, made explicit by their incorrect use of terminology and processes associated with making comments. In addition, the concept of a network was awkwardly described and reveals a confusion between the relationship of software features and the process of using technology to connect with others.

The object of learning in this category was expressed as being directed towards completion of activities as assessable tasks with a focus on learning as reproducing or applying processes, indicating a surface approach to learning. Under-formed concepts

represent low levels of self-efficacy that inhibit the learners attempting to manage their challenges.

The pedagogical implications of Category A require a set of strategies that encourage the learners to attempt tasks that are considered achievable, while making explicit the support mechanisms, such as MKOs. If ignored, these learners may not progress beyond this point, limiting their ability to complete assessable tasks or further learning opportunities.

5.2.2 Category B: Developing a network is conditional on creating an engaging online self-representation.

In contrast to category A, which relates the developing of networks to an external object, in this category the learners' self-representation is depicted as a pivotal means of developing a readership that will then lead to the development of a DLN. Self-representation was illustrated by the selection of themes and graphics, the organisation of content on the weblogs, and supported by descriptions on their 'About Me' pages. Learners in this category portrayed themselves as 'only students' and described a lack of confidence in being able to contribute adequately to networks where they were less informed or qualified to contribute than others. The participant excerpt below highlights the lack of self-efficacy and hesitation to engage:

> *Reading the person's 'About Me' page assisted in determining how I should communicate within their network. Initially I found this to be a daunting concept as it involved commenting on peoples' weblogs I had not previously had contact with. I was concerned about how to structure my comments and what they might think of me…* (Fnl/Rel/Ntwk/SPub)

Others referred to successful networkers in terms of 'fan club' style readerships, asserting that their attempts to develop networks were related to their inability to be an engaging identity.

> *…it does appear that the regular bloggers have some of their 'fan club' listed as links on their website. They do not appear to use the trackback function and use their networks for commenting on each others weblogs, sort of like an online*

support group. I have made comments and tried to become a 'fan' of some of these blogs. I have also formally requested to join two weblog hosts – I'm waiting to hear the outcome. (Fnl/Ntwk/Rel*)*

This weblog post highlights an interesting perception that has become the nomenclature for current social networks, the concept of 'friends' and being 'liked', popularised by Facebook.

The object of learning continues to be expressed as a task to be completed, although an awareness of other approaches indicates an understanding of the process beyond the surface approach of simply reproducing content. There are initial indications associated with relationships between networks of people; however, the focus is one of an internal horizon or perception of the context.

The key pedagogical implications associated with Category B would emphasise the development of self-efficacy, which will manifest itself through the learners' self-representation. Using Bandura's (1977b) observational learning and modelling framework, alongside the use of peers in the role of MKOs, was shown in the data to be the most useful for these learners to progress through to Category C.

5.2.3 Category C: Developing a network is reliant upon proficient writing – having opinions and being able to articulate them.

Category C is very closely linked to Category B. In this category the learners were expressing apprehension about their writing skills, in particular the fear of publicly publishing opinions when they do not perceive themselves to be the expert on the topic or in the field of study. The participant quotes from their weblog posts below illustrate the range of perception and levels of self-efficacy.

I found it to be a bit scary and intimidating leaving comments and attempting to initiate conversation with others outside the classroom. I just thought that they'd think that I was intellectually inferior, and that my comments were useless and idle. However, I left comments all the same, because I had something to say, and a point to make. (Fnl/SEff/SPub/Ntwk)

I also found it hard to have things to write about, I didn't come across huge amounts of content that I found interesting to write about… (Fnl/SEff/SPub/Ntwk)

I felt that I had advice to give the author although I was frighted [sic] because I felt that I am was not professional enough or it is not my place to comment on his blog because I am not an expert in the subject. It feels weird to even comment on someone else's blog. This is an awesome experience. (Fnl/SEff/SPub/Ntwk/Em+)

The comments above recognise the act of writing and publishing publicly as a crucial element in the development of their learning and subsequent capacity to engage in learning networks and they appear willing to attempt to engage.

I still feel a little reserved about adding comments… in case the others do not like what I say and or what I say was pointless or of little value to the project. I have to learn to get my head around this and not care what others will think, to an extent. (Wkly/SEff/SPub/Ntwk)

The hesitation voiced in the quote above suggests the need to identify a pedagogical intervention that can support the learner to take this initial step with more confidence.

The object of the learning in this category can be related to a self-awareness that indicates a level of understanding in an attempt to consciously change their attitude towards publicly writing. There is an indication in this category of reflection and metacognition in the posts, with the realisation of the need to initiate action in order to move towards a deeper approach to the learning processes.

The data revealed the importance of MKOs as one of the key pedagogical strategies that enabled the learners to participate with network members external to their subject cohort. The data also indicated that participants who posted to their weblogs frequently were the most successful at progressing through this category.

5.2.4 Category D: Developing a network is about discovering others in similar fields of interest.

The learners shift their focus beyond the development of their own weblogs to an external horizon, with awareness of others distinguishing this category. There is evidence that the initial awareness is focused within the class limits, but can expand quickly outside the confines of the institution as the learners identify a strategy for locating weblogs and follow classmates' patterns of behaviour.

> *My initial searches on Google and vivisimo lead me to various search engines and traditional research papers such as the Masie centre and the IBM learning centre. With the progression through the subject my networks moved to other students weblogs, mainly to see what they were doing...* (Fnl/Ntwk)

While this participant shows an initial focus towards an external horizon, the focal point was search engines and innate objects, rather than people. However, the use of peers to find guidance provides a starting point that was common in the data.

However, there is a dimension expressed by frustration in relation to their ability to search and discover other weblogs in their field of interest, beyond the boundaries of the classroom, which can significantly inhibit further attempts to network outside of these parameters. The following comment highlights an approach of locating people through generic search engines that proved to be not only frustrating, but also an inhibitor to further searches.

> *... I came across Bloghub.com it is a directory where people can exchange their ideas. I thought this would be an excellent site to investigate eLearning strategies in Adult learning. The first problem I encountered whilst utilising the network was that the initial network pages had links to other people's names. I felt frustrated because, how are you supposed to know what the link is about? However, I found it troublesome to overcome the issue that I could only see links that were just names. In addition, I wasted my time clicking on a name to go to the other blog to find that it wasn't what I was after.* (Fnl/Ntwk/Em-)

In this category, the data indicated that the majority of learners could describe their awareness of the relationship between actively writing and publishing information, but

seemed to expect a readership and network to naturally occur without further action on their behalf, while others describe the use of searching techniques that do not produce any results other than reference resources.

This category contains multi-faceted issues that emerged in the data as descriptions of digital capability or information literacy, rather than the self-publishing, self-efficacy concerns depicted in categories B and C. The pedagogical implications of this category point to the need for the educator to be actively conscious of the frustrations and inability of learners to locate others to network with. While avoiding the direct instructional model, the presence as a MKO that demonstrates the network development through locating potential connections of interest becomes a critical phase in the progression to Category E.

5.2.5 Category E: Developing a network is about active participation, reading, writing and exchanging opinions.

In this category, the learners explained the process of developing and maintaining a DLN as a detailed series of activities that remained related with continued engagement within their network. In contrast to category A, learners described the functions and capabilities of the technology in a positive manner that was related to their success of developing networks and as a result, they viewed the technology as an enabler, as illustrated in the comment below:

> *The use of a weblog during this semester has definitely proved to be a wonderful tool for learning. It enabled me to develop my learning at different levels. Firstly my weblog assisted me in understanding how to research and use the web in a structured way.* (Fnl/CL/Ntwk)

The following excerpts from participant weblogs emphasise the learners' overall perception and positive attitude experienced once they had established their networks.

> *When beginning to establish networks, I could not have predicted how much I enjoyed this process and the amount of knowledge that was gained.* (Fnl/Ntwk/Em+)

...the learning that is related to a network is very powerful. I have learnt that you can get direct responses with many different opinions whether they are from an academic or a person that is really interested in the subject. There are so many different people with so many different opinions and advice that I am hooked. (Fnl/Ntwk/CLKS/SPub/Em+)

The descriptions in the series of comments below represent the learners' awareness of the process as a whole, indicating the appreciation of relations between the parts and the acts of participating in networks.

I have learnt through my weblog that eLearning can take on different forms and provides new ways of working with each other. I have learnt how to communicate in a relevant way and how important collaboration is. I have learnt to direct my focus and manage my thoughts while benefiting from other's work. Webloggers have helped me a lot because reading them made me think and then react. (Fnl/CL/Rel/MKO/Ntwk)

It has been hard at the beginning but so challenging. And getting comments has been such a reward on myself. Thirdly this blog has provided me a good basis for the future. I will definitely benefit from this experience in the continuation of my studies. (Fnl/Ntwk)

My weblog enabled to go over my fears and I am now ready to engage and get involved. I have personally and professionally improved because I have learnt to appreciate this new material. I have learnt how to use other people works and refer to them and build up my understanding... (Fnl/Ntwk/Rel/CLKS)

The object of learning in this category indicated a more evolved concept development in the learners' ways of seeing and experiencing the learning processes in networks, illustrating a deep approach to learning. The data revealed the recognition of ongoing participatory actions to maintain the collaborative, knowledge sharing network that was stated as being of high value to the learners.

As the learners progress to Category E, the need for pedagogical interventions is reduced. However, although the learners had demonstrated aspects of self-regulatory behaviours, ongoing support that focuses on ensuring meaningful interactions is

maintained and sustainable connections continue to provide ongoing learning opportunities, shifting the responsibility of the educator to be less focused on guidance and more focused on relationships of concepts and people.

5.2.6 Summary of Categories of Description

The categories of description were established using the phenomenographic method to determine relationships between the themes that had been identified from the first iteration of data analysis in Part 1 of this chapter. The categories of description outlined represent the structural variation in the learners' experience of developing and participating in a DLN.

The hierarchical relationship depicts the object of learning within each category, which provides the educator with information to inform design of pedagogical strategies. Specifically, in the context of this research study, the categories of description indicate specific areas for pedagogical attention and support the proposal in this thesis for a shift in pedagogical approach underpinned by a framework designed for the introduction of social software into learning environments.

The third and final iteration of phenomenographic data analysis incorporates the categories of description and the findings from Part 1 of this chapter, to determine the expanding themes of awareness which inform the development of the phenomenographic outcome space in Part 3.

Part 3: The DLN outcome space

5.3 Introduction

The third and final iteration of data analysis used the phenomenographic method that sought to determine the structural and referential relationships between the categories of description to reveal themes of expanding awareness that informed the development of the DLN outcome space. According to Marton and Booth (1997), 'the outcome space is the complex of categories of description comprising distinct groupings of aspects of the phenomenon and the relationships between them' (p. 125).

In this study, the phenomenographic outcome space was produced as the final iteration of analysis that enabled the clear presentation of the relationship between all aspects of the data. The process of analysis considered the categories of description and the structural aspects of the data from the first iteration of analysis to determine how the learners approached the task of developing a DLN and indicated how the learners found meaning through performing the tasks, related them to their previous experiences, and situated those experiences into their broader learning context. This final review of data revealed the themes of expanding awareness, which characterise the nature of the relationships between the categories of description and the variation in the learners' experiences.

The themes emerged into four groups of experiences, and instead of a relationship that indicated a hierarchical structure between the four groupings, the experiences emerged as themes where the level of importance was equally distributed. Further analysis identified an interconnected relationship, which determined that any attempt to impose a sequential structure would create an imbalance with the impact of altering the potential outcome and consequent nature of the participant's DLN.

The four themes of expanding awareness that encompass the DLN outcome space are:

- The DLN as a learning environment;

- The learners' experience of self-publishing in a DLN;

- The 5SPF as an enabler for creating a DLN; and

- The Connected Educator as the catalyst for initiating connections across DLNs.

A visual representation of the DLN outcome space, as in Figure 5.7 below, illustrates the equally distributed nature of the relationship, with the central node or focal point represented by the DLN as a learning environment.
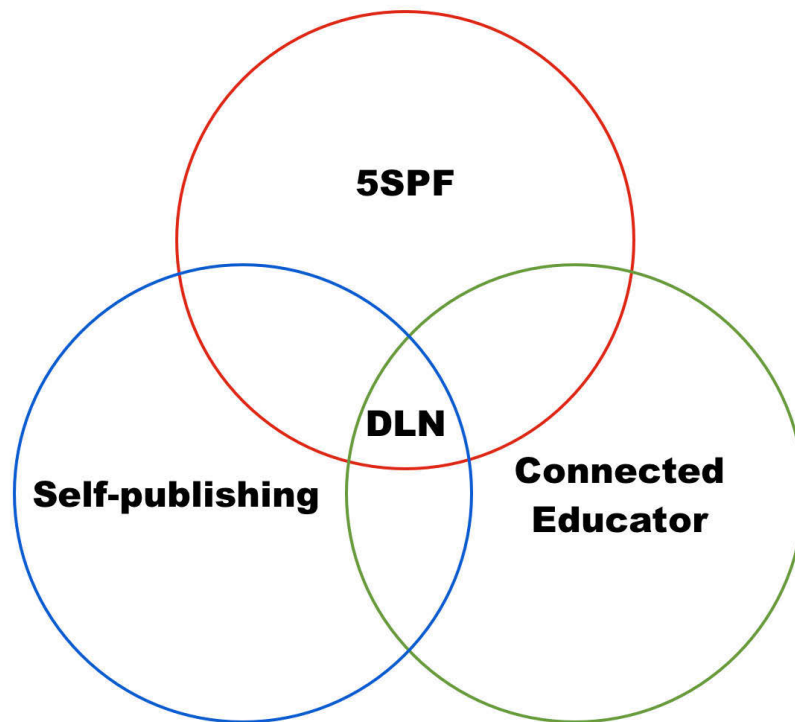
Figure 5.7: The DLN outcome space

A description of each theme will include a discussion that highlights the relevance and impact in comparison with current related literature, while identifying aspects that point to potential for further research, or opportunities for more effective pedagogical practices in both the higher education and organisational learning contexts. In Chapter Six a contemporary viewpoint will expand the discussion to include current developments that indicate a convergence and divergence of thinking related to the pedagogical implications of the learners' experiences from the results of this research project.

5.3.1 The DLN as a learning environment

Central to the learners' experience was the realisation of the potential of participating in a DLN. This core theme, centrally located in the visual representation (Figure 5.7) and interconnecting all themes, is the DLN as a learning environment where their personal weblog and the act of self-publishing afforded the learners opportunities to post their learning experiences; share their opinions; connect with others; organise and structure their learning; engage in reflective and metacognitive processes that lead to deeper

learning and self-regulatory behaviours; and have the capacity for engagement with others that extended their concept of learning beyond the limits of the classroom and LMS discussion forum constrained experiences.

More than a third of the participants viewed the DLN as their central focus, with the classroom sessions a secondary place for face-to-face interactions, described in conjunction with specific learning tasks and content related activities. In other cases, a holistic perspective incorporated all elements of both physical, classroom engagement with online spaces including the university LMS and their DLN.

Frameworks and literature in eLearning (including social software and web-based learning fields) at the time of the research study (2000 – 2005) focused on describing the learning environment within the limits of the LMS, the classroom, and institution constrained knowledge (Boettcher 2003; Salmon 2000), with the technology aspects continually referred to as tools for learning or delivery of instructional materials, subsequently underestimating the cultural and contextual learning aspects that participating in a networked environment affords.

In contrast, the social learning theoretical perspectives that informed the pedagogical approach in this study refer to the learning environment in terms of interactions where meaning is socially constructed and the context and situation influence the culture for learning (Bandura 1977b; Lave & Wenger 1991; Mercer 1994; Vygotsky 1978). The emphasis on dialogue that integrates learning into the context where it is occurring, where meaning is based upon shared experiences, requires a situated learning environment (Lave & Wenger 1991; Vygotsky 1986) that locates the learning in realistic contexts and enables participants to negotiate their interactions and roles and behaviours to shape the culture (Woo & Reeves 2007). Transposing these concepts to include online environments, Wenger (1998) described the context as both time and place shifted, while Woo & Reeves (2007) propose a framework for defining online interactions to discern between simple tasks (such as point and click responses) to actions that lead to intellectual growth and knowledge construction.

Notwithstanding the use of asynchronous discussion forums in an LMS, the majority of eLearning implementations shifted the focus of learning interactions to a person-computer interface or learner-content interaction (Boettcher 2007; Woo & Reeves 2007)

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that de-personalised the learning experience to automated responses. Yet, the learners in the research project witnessed each other's learning experiences and contributed to them online through meaningful interactions (Woo & Reeves 2007). They transitioned across roles, some as MKOs, some in need of support, some as active participants, others as legitimate peripheral participants (Lave & Wenger 1991). They learned practices together, in a socially constructed context, that enabled them to become more reflective, more collaborative, and with self-regulatory behaviours in an online learning network.

It is worthwhile elaborating further on the learner-learner interactions performed in the DLN learning environment, since these formed such an important aspect of the participants' learning experiences. A high percentage of the research participants discussed the need for and process of building relationships as critical to the development and ongoing value of their network. In social presence theory, when applied to online environments, the importance of building and establishing relationships underpins how successfully collaborative learning will occur (Gunawardena 1995; Gustafson, Hodgson & Tickner 2004), a point that was highlighted in the research results in this study (see Part 1, Section 5.1.5, Stage 5, and Part 2, Section 5.2.4, Category D). Although the variation in the research participants' levels of achievement to create and maintain relationships were not consistent, the overall emerging theme indicated their awareness and acknowledgement of relationships to enhance the value of their network, which included collaborative learning experiences.

The DLN as a learning environment transformed the learners' experiences into a place where learning was enabled; it was not a software platform or tool, it was a method for engagement where learners were active participants and socially connected through technology. The environment extended beyond the dichotomy of learner and educator to include MKOs; additional network connections, who may or may not be directly connected to the subject-related learning context; to an implicitly negotiated culture that is formed through self-published social participation, collaboration, and co-operation across a diverse landscape of opportunities.

Contemporary developments in conceptualising learning environments will be further addressed in Chapter Six, Section 6.2 where scenarios are being used to describe how

learners can interact seamlessly across physical and online spaces and the principles that underpin the effective implementation into educational contexts are outlined.

The DLN as a learning environment is a central theme in the outcome space and incorporates aspects of all expanded themes of awareness. The following sections, Section 5.3.2, The learners' experience of self-publishing in a DLN; Section 5.3.3, The 5SPF as an enabler for creating a DLN; and Section 5.3.4, The Connected Educator, will continue the descriptions of the outcome space and highlight the interconnectedness between the themes.

5.3.2 The learners' experience of self-publishing in a DLN

The DLN as a learning environment encompassed the learners' experience in terms of context and socially constructed interactions leading to collaborative learning and knowledge sharing. More specifically the research participants described a number of processes and actions within their DLN interactions that directly related to the experience of self-publishing their learning activities publicly on their weblogs.

The areas that highlighted self-publishing as an expanding theme are represented in Category B (Section 5.2.2) where their self-representation impacted their self-publishing experience; Category C (Section 5.2.3) where the processes of reflection, expressing written opinions, and the awareness of readers influenced the learners' experience; and in Category E (Section 5.2.5) where the learners describe actions that led to the development of their DLN. Evaluating these topics against the researcher's field notes identified the following aspects that have enhanced their experience of the DLN as a self-publishing environment:

- The nature of publishing publicly;

- The process of self-representation on their weblogs;

- An awareness of readers, other than the subject lecturer;

- Structuring of learning content from a personal information and knowledge management perspective;

- Organisation of content on their weblog, specifically with ease of locating topics of interest for readers;

- Ownership of content posted to their weblogs;

- Evidence of deep learning, through the processes of metacognition, reflection and writing publicly;

- Combining characteristics of informal learning interactions in a formal learning structure; and

- Continual feedback from others.

The key elements from these aspects will take into consideration the actions that expanded the variation in learner experiences and draw attention to fundamental differences.

The research participants described their awareness of readers, whether that included their classmates or external readers due to the nature of their publicly available weblog, as having a direct influence on their writing processes: how they approached related tasks, such as the structure and use of categories for content organisation; and the personalisation of their weblog skin (look and feel). In the context of the study, this incorporates self-representation which is referred to in terms of how a participant described themselves on their 'About Me' page and how they represented themselves through reified objects such blog posts, use of weblog themes, and use of categories to organise information. As a whole, all these aspects are interrelated with the participants' experiences of self-publishing and participating in their DLN.

A number of recent authors have attempted to define self-representation in online networks as digital identity both in terms of a pragmatic description of explicit items that include name, email address and other credentials (Rannenberg et al. 2009), through to a persona that represents an individual's role in an online community or network and perhaps characterises aspects of their identity that they wish or are prepared to share, for example, a learner or student (Williams et al. 2013), whereas Downes (2007b) considers network identity a distributed profile, identifiable through participation and interactions. The use of digital identity terminology as described in the

literature did not seem adequate when examined in the context of the research project, as it limited the impact of actions the learners described that influenced how they approached learning tasks and the management of their weblogs.

Self-representation in social learning theories contributes a more appropriate description of how the research participants experienced self-publishing. Bandura's (1977b) observational learning and modelling based on comparative analysis and feedback processes develops concepts of others through social interactions, and reflection. In a comparative point of view, Wenger (1998) describes self-representation, or identity, in an online group or community as a negotiated experience that is defined by participation and interaction with others. These descriptions align more accurately with the processes referred to by the learners as influencing their experience of self-publishing and how they determined their weblog structure and entered into the development of their DLN.

Current studies are now acknowledging the role of self-representation, as contextually located by the social learning perspective above, for encouraging relationship formation (Koole & Parchoma 2013), and subsequently the connection to not only participation but also self-representation is crucial for meaningful network interactions and learning experiences, a position that is continually adjusted as meaning is negotiated through the interaction with others (Driscoll 2005; Merchant 2006).

Research participants highlighted the relevance of relationships to their self-representation and how feedback informed interactions as an essential component for their DLN (see Section 5.1). Implied in Category E (Section 5.2.5) through the active participation in their network, the subsequent value associated with self-publishing is emphasised.

The role of MKOs has been discussed in previous sections of this chapter (referred throughout all stages in Section 5.1); the distinction to be noted in the theme for self-publishing is the positive influence indicated by the learners on their writing processes and participation levels in the DLN environment. The feedback loops with the MKOs enabled additional support mechanisms and enhanced self-efficacy, while additionally creating a mechanism for learners to validate or verify their performance through these interactions (Bandura 1977a, 1997; Koole & Parchoma 2013; Merchant 2006; Vygotksy 1978).

The evidence of an interdependence between the processes of self-representation, building relationships through meaningful interactions, engaging with MKOs, and using feedback to create a motivation loop that built the learners' levels of self-efficacy and their overall experiences in the DLN environment is the inherent factor of the experience of publicly self-publishing in this theme.

5.3.3 The 5SPF as an enabler for creating a DLN

The 5SPF is interconnected to the other expanding themes of awareness as the process that enabled the creation of the DLN and development of the learners' capabilities to effectively build both their technical capability, but also to expand their approach to learning tasks through meaningful interactions and a collaborative, knowledge sharing mind-set.

The modifications applied to the design of the final version of the 5SPF, prior to the commencement of this study, had a significant, positive impact on the learners' actions (see Chapter Three, Section 3.1, Issues for consideration for the next and final version of the framework). The emphasis was on the application of social learning theories to inform the refinement of the learning tasks at each stage, which generated the segmentation of tasks into achievable outputs that paid attention to the learners' ZPDs (Vygotsky 1978) and placed more focus on providing examples that leveraged the observational learning process (Bandura 1977b). The focus on the initial foundational elements of creating a DLN assisted in the concept formation and negotiated meaning through learning tasks that were situated and contextual. The additional attention in early writing tasks (see Chapter Three, Part 2, Section 3.7, Stage 2, and Section 3.8, Stage 3) while developing their publicly published outputs resulted in a reflective process that led to increased levels of self-efficacy and engagement with the development and participation in their DLN. This directly connects to the theme of self-publishing outlined in Section 5.3.2 above.

The decision to integrate the weblogs into the subject and create a connection to the assessment strategy for the subject positioned the 5SPF as a critical element in the overall learning activities for each subject. Prior to this study, the use of weblogs had been an optional activity, which did not encourage those who were challenged by the

introduction of social software to persevere. Nor did it assert any relevant connection between the achievement of learning tasks with assessable content, a factor emphasised by Boud (2007) as important for student attention and the development of informed judgement, or the capability to evaluate and appraise situations and draw conclusions that inform future actions.

The emphasis on a shift in pedagogical approach and the design of activities in the 5SPF for this study included learning tasks that acknowledged the value of situated learning (Lave & Wenger 1991). More specifically, the activities could be defined in terms of authentic learning tasks where the characteristics were identified by relevance; complex actions that require sustained attention; opportunities to collaborate and reflect; and allowing time for creation of a finished product and diverse outcomes (Woo et al. 2007).

One of the significant connections with this theme, the 5SPF as an enabler, and the theme of the learners' experience of self-publishing, links the learning activities of weekly posting to their weblogs as an area where the pressure of producing fully formed traditional academic writing was mitigated by the process of being able to explore ideas, seek and receive feedback, while validating their own perspective. This process is described as the tentative construction of meaning (Kervin, Mantei & Herrington, 2009) and connected to the development of metacognitive and reflective writing skills.

The focus of writing processes through the 5SPF enabled a progression that led the learner from simple tasks through to more complex writing with the intention of engagement. As noted above, Category C (described in Section 5.2.3 of this chapter) highlighted the learners' awareness of proficient writing as one of the key structural experiences for developing their DLN.

Another notable characteristic that was embedded in the design of the 5SPF was the encouragement to openly share knowledge and provide assistance to learners' class peers. The learners repeatedly referred to the value gained from the support of Vygotsky's (1978) MKOs. As characterised in Section 5.1 of this chapter, the role of the MKO shifts with the stages of the 5SPF, driven by the need of the learner to receive feedback or support from others with different skills or knowledge. The capacity to engage with others when required was identified as having a positive impact on the

learners' aptitude to attain increased levels of self-efficacy that led to evidence of self-regulatory behaviours.

Whilst the development of self-regulatory behaviours also appears to have been influenced by the self-publishing theme, the motivational aspects associated with the feedback loops when the learners engaged in meaningful interactions aligns with Category E (see Section 5.2.5 in this chapter) and the factors described in the self-regulation of learning literature (Bandura 1977a, 1997; Bandura & Jourden 1991; Zimmerman, Bandura & Martinez-Pons 1992; Zimmerman & Schunk 2011).

Numerous papers have been published since the study was conducted in 2005 that refer to the introduction of social software, and weblogs specifically, in higher education contexts (Du & Wagner 2007; Kerawalla et al. 2008; Kervin, Mantei & Herrington 2009; Mundy 2013) that report mixed levels of success. Predominantly, these have been concerned with low levels of student engagement in settings where social software has been deployed with restricted access, unstructured guidance for usage (Kerawalla et al. 2009b), and assumptions relating to the technical capabilities of the students (Stoerger 2013). Issues highlighting anxiety and lack of motivation in students (Beuschel 2009) provide no explanation of the processes that may have impacted blogging activities; however, their recommendations include integration of a strategic framework that addresses time, motivation, and preparation of tools. The 5SPF was specifically designed to encompass all of these issues described above and ensures the variation in the learners' experiences are pedagogically managed to optimise the opportunities within the DLN environment.

Recent studies of social software in education literature and research projects reviewed have been short-term, typically using timeframes of a single semester or subject. Yet, research in this area conducted at the time of this study (Farmer & Bartlett-Bragg 2005; O'Donnell 2005) had identified the limitations of short-term implementations. The research conducted in this project was also limited to the single semester, single subject timeframe and worthy of note was that the majority of participants who accomplished Stage 5 in the 5SPF as the semester was completing, at the exact point where they reported the value of the experience of participating in a DLN. The significance of the limited timeframe cannot be underestimated as a short-term engagement tactic, versus a long-term pedagogical strategy that has the potential to be applied across an entire

qualification. Future implementations of the 5SPF would recommend consideration of introducing an enhanced set of activities in Stage 5 to further encourage the motivational strategies associated with self-regulatory behaviours, particularly to support extended timeframes and the sustainability of the DLN.

Remarkably, a number of problematic issues that were present in this research project, in 2005, appear consistently in a review of more recent studies: the lack of student experience with weblogs; lack of technical capabilities as an inhibitor to student uptake; an overall experience that was chaotic and overwhelming for a notable portion of learners in the early stages of implementation; the need for an organised approach to course content; and the under-formed learners' concept of online networks (Beuschel 2009; Kerawalla et al. 2009a; Munday 2013; Stoerger 2013). The apparent lack of pedagogical guidance across these projects indicates attention diverted to the processes of learning and introduction of new technologies with an expectation that simply prescribing a set of activities or providing access to a publishing platform will be sufficient for learners to adopt and succeed. Kerawalla et al. (2009a; 2009b) claim this situation has occurred due to the potential role of social software not being fully understood. Meanwhile, the integration of weblogs into learning environments manifests as another technology tool with the design approach of listing comparisons with various different social software platforms and describing activities suited to the different features available (Weller 2007).

However, while the practice of implementation without attention to pedagogical frameworks, both from a learner's and an educator's perspective, remains unaddressed there could be an expectation of more research studies reporting similar findings to those discussed in this section (Hatzipanagos 2013; Ravenscroft et al. 2009; Van Petegem & Donche 2006).

Although the problem of lack of pedagogical frameworks relating to the introduction and use of social software remains, there is a growing body of research that has articulated the issues relating to this problem and these report similar findings to those discussed in this section.

5.3.4 The role of the Connected Educator in a DLN

The role of the educator in the study and pedagogical approach in the 5SPF was underpinned by both Salmon's (2000) Computer Mediated Conferencing model and associated activities for e-Moderators, and Baumgartner's (2004) prototypical models of education; see Chapter Three, Sections 3.8.1 and 3.8.2. In particular, the 5SPF required a pedagogical approach that, for the most part, aligned with Baumgartner's (2004) Mode 3. However, as highlighted above in Section 5.1, Findings, in the researcher's field notes in Section 5.1.4, Stage 4, the inadequacy of this approach and the need for an expanded mind-set to include a more strategic network-thinking approach was identified.

Although the categories of description, which represent the variation in the learners' experiences, do not reference the role of the educator, the pedagogical implications specifically in Category D and E, require a different mind-set for the successful integration of social software into learning environments.

The pedagogical approach, labelled the Connected Educator for the purposes of this thesis, has been included in the DLN outcome space as an emerging theme of awareness due to the substantial impact on the learners for establishing behaviours that enable the successful completion of the stages in the 5SPF and creating a DLN.

Drawing upon the findings in the first iteration of data analysis, including the researcher's field notes (see Section 5.1 in this chapter), the structural variation in the learners' experiences that informed the categories of description identified the capabilities required to create and participate in a DLN (see Section 5.2). Inferred by these capabilities are the critical features where pedagogical attention is required. Based on my dual role as the educator and the researcher, the critical features indicated the necessity of more than design of pedagogical strategies and associated activities; instead, it required an informed pedagogical approach that included the capability to participate with the learners in the DLN environment in ways that have not been previously addressed adequately by online teaching methodologies, which still focused on a direct instructional, didactic approach.

The design of the 5SPF identified Baumgartner's (2004) Mode 3 as the desired approach that underpinned the pedagogical tactics, while recognising that a Mode 2

approach was required in the initial set-up stages during learners' concept formation. Notwithstanding the relevance of these approaches, the adjustments and application of the 5SPF in this research project has identified the limitations of a Mode 3 approach that has the potential to inhibit the learners' achievements. Table 5.4 below outlines Baumgartner's (2004) Modes of Teaching with the additional attributes for a Connected Educator.

Table 5.4 Baumgartner's Modes of Teaching plus Connected Educator attributes

	Mode 1: Transfer (Directed Teaching)	Mode 2: Tutor (Facilitated Learning)	Mode 3: Coach (Informal Guide)	Connected Educator
Learning environment	Programmed instruction	Problem solving	Complex simulations	Interconnected, relationship-based environment
Educator's approach	To teach, to explain	To observe, to help, to demonstrate	To co-operate, to support	To empower, to connect, to curate
Design of learning activities	Production of correct answers	Selection of methods and its use	Realisation of adequate action strategies	Enable an architecture of participation with meaningful interactions
Learner actions	To know, to remember	To do, to practise	To cope, to master	To contribute, to interact, to network
Learner knowledge	Transfer of knowledge	Presentation of pre-determined problems	Action in real situations (complex and social)	Interconnected, complex and socially situated
Learner capability				Learner capabilities to achieve: Social, self-regulatory, technical

The variation in pedagogical approach required to address the categories of description, from Baumgartner's (2004) Mode 3, called for an adjustment to include an approach that adopted a mind-set underpinned by the social learning principles (Bandura 1977b; Lave & Wenger 1991; Vygotsky 1978; Wenger 1998). The core attributes are not defined by a skill-set or a list of tasks but by the adoption of roles that are flexibly interconnected to the context of the learners. The approach requires a focus on people rather than process and technology as a tool, whilst recognising that the social software becomes the enabler for creating the networked learning environment. The term educator has intentionally being used to avoid the mind-set that can be associated with direct instruction or teaching.

The role of the Connected Educator requires an awareness of Bandura's (1977b) observational modelling and the provision of examples and behaviours to motivate and

guide learners through the 5SPF. The role of the educator was frequently described in the first iteration of results reported against the 5SPF, in particular throughout the weekly commentary posted by the research participants (see Section 5.1 for examples), in a similar vein to the descriptions applied to peer support that are directly associated with Vygotsky's (1978) role of the MKO. The Connected Educator, as an MKO, becomes valued as a learning support in contexts where it is required, not as an instructionist teacher directing levels of interactions.

The findings, highlighted in the learners' visual representations (see Section 5.1.7), indicated the challenge with concept formation regarding the structure of their DLN. The role of the Connected Educator, in future implementations of social software would play a more active role through the facilitation of connections and modelling of behaviours, while remaining in the role of an MKO, not a didactic Mode 1 or 2 (Baumgartner 2004) teacher.

Anderson, Rourke, Archer and Garrison (2001) identified three critical roles for online teachers: design and organise the learning experiences (and the online environment), create learning activities to include interactions between students, and provide subject matter expertise through direct instruction and relate these to the online learning Community of Inquiry model (Garrison, Anderson & Archer 2000). The model originates from distance education practices and although there is alignment with the 5SPF approach for learners, the model and roles for online teachers diverges from the pedagogical approach of the Connected Educator in this study by remaining with the fundamental characteristic of online teachers using direct instruction, an approach that has previously been identified with Baumgartner's (2004) Mode 1.

Pedagogical approaches or teaching patterns are acknowledged as a crucial influence on the learning environment (Van Petegem & Donche 2006), yet the implementations of new learning technologies frequently ignore this aspect, focusing more on the technology positioned as a tool (Anderson 2008b). A notable opportunity exists to shift the focus towards the learning environment as a whole, inclusive of pedagogical frameworks for implementation such as the 5SPF, pedagogical approaches such as the Connected Educator, and technology or a social software platform as the enabler.

The implications of not addressing the pedagogical approach associated with the application of the 5SPF are considerable. According to Brown (2005), 'You can't just drop new innovations into a classroom and hope that the instructor will invent effective ways to use them. To fully utilise a new teaching technology you often need to invent new teaching practices as well' (p. 5).

5.3.5 The DLN outcome space summary

The final iteration of data analysis in the phenomenographic method reviewed the previous iterations of data, including the categories of description to complete the investigation into the learners' experience of developing DLNs with self-publishing technologies and establish the phenomenographic outcome space.

The DLN outcome space, the presentation of expanded themes of awareness from the research project, revealed an interconnected series of relationships that represent the structural and referential variation in learners' experiences and provide actionable insights into the significant pedagogical approaches required for effective implementation of social software in adult education learning contexts; see Figure 5.7 for a visual representation.

The four expanded themes of awareness examined were: the DLN as a learning environment (Section 5.3.1); the learners' experience of self-publishing in a DLN (Section 5.3.2); the 5SPF as an enabler for creating a DLN (Section 5.3.3); and the Connected Educator (Section 5.3.4)

The DLN as a learning environment is the central point of connection between the other themes, acknowledging the importance of viewing the DLN not just as a software tool, but as a location where a different combination of learning interactions occur.

The learners' experience of self-publishing encompassed a range of aspects identified in the data by the learners as having an impact on their experience of learning in a DLN. A number of these were reflected in the categories of description (see Part 2 in this chapter), in particular, the significance of self-representation and the perceived influence on their ability to build relationships with others; the value of MKOs as a support mechanism that underpinned the development of self-efficacy and directly related to the value of feedback during the formative stages of concepts, as a means of

validating or understanding differing opinions; and finally, the awareness of readers that resulted in the learners considering their written contributions in ways that varied from their usual experiences of written academic styles.

The application of the pedagogical framework, the 5SPF, had a positive impact on the learners' capabilities to build and engage in a DLN. The 5SPF provided an enabling framework for the learners to achieve results and overcome barriers identified in other similar studies integrating social software. Problematic issues addressed in this study include: lack of motivation; low levels of engagement; and general confusion about how to integrate self-publishing with weblogs.

Finally, the DLN outcome space included the theme of the Connected Educator, a role that was recognised as pivotal in the overall pedagogical strategy for successfully implementing the 5SPF. The extension of the role of the educator, not previously addressed by Baumgartner's (2004) modes of teaching, or Salmon's (2000) CMC model for e-Moderators, identified attributes (see Table 5.4) that include a change in pedagogical approach to create interconnected, meaning-oriented actions that support an environment focused on deep learning and development of self-regulated behaviours.

The final part of this chapter, Part 4, provides a summary of the previous parts and reviews the limitations of the study (previously mentioned in Chapter One, Section 1.3.4) and concludes with an introduction to Chapter Six.

Part 4: Chapter summary

5.4 Summary of findings

The research has focused on the variation of learners' experiences, which were revealed through the fundamental features, and the associated capabilities learners needed to attain to successfully develop and participate in a DLN. The application of the 5SPF to provide the pedagogical guidance through the process of creating a DLN presented the basis for investigating the learners' experiences and subsequently collecting the data for the responses to the research questions. The three iterations of phenomenographic data analysis reported in this chapter have outlined the findings and the implications that established the expanded themes of awareness informing the development of the DLN outcome space.

The discussion of the DLN outcome space (Section 5.3) facilitated the opportunity to review more recent studies and examine the findings in an attempt to determine the relevance and contributions of the research project in contemporary contexts.

The research problem had focused on how to provide an alternative pedagogical approach to assist educators and learners to adopt and use new social software technologies effectively. To conclude this chapter, a review of the research questions brings into perspective how the findings are represented against the questions and the location of connected findings in the chapter.

Research Question 1 (RQ1): How did the participants approach the task of developing a distributed learning network?

RQ1 examined the 'how' aspects of the learners' approach to tasks within the stages of the 5SPF and how this impacted their capability to create a DLN. The first iteration of data analysis (Part 1 in this chapter) revealed the distinct actions and processes against each stage of the 5SPF.

The variation in the participants' approaches can be viewed most clearly in the structural representation outlined in the categories of description (Part 2 in this chapter).

The 5SPF was purposefully designed to provide a scaffold that guided learners through activities that lead to the development of DLNs through self-publishing. The categories

of description reveal where aspects of this process were challenging and directly impacted how the learners' structured their weblogs and viewed their capability to develop and learn in a network.

Significantly, the use social software, the technical aspects of RQ1, was only apparent in Category A. It was revealed as primary challenge, but the least important overall category for developing a DLN. A set of carefully planned pedagogical strategies that encouraged learners to overcome initial challenges, together with support from MKOs was determined to be an effective approach that enabled learners to progress beyond Category A.

The remaining categories, B – E, made apparent the experiences of self-publishing that included the learner's self-representation, their perception of their writing skills, their ability to identify people to connect with, and the process of participating in a network through self-publishing.

The importance of recognising the pedagogical variations and associated implications for each of the categories of description provide educators with a framework for designing strategies to effectively introduce self-publishing and DLNs into learning environments.

Research Question 2 (RQ2): What were the participants' experiences of the process of learning in a network?

RQ2 focused on an exploration of the learners' experiences and the ways they described their approaches to technology and networking.

Part 1 of this chapter revealed the participants' experiences as they completed the learning activities within the 5SPF. The data collected from these experiences was analysed live, online directly from their weblogs allowing the examination of contextual connectedness as the participants had constructed it. The visual representations (see Section 5.1.6) provided an alternative analytical lens that afforded sophisticated insights into the participants' process for developing a DLN through an analysis of their concept formation.

The categories of description in Part 2 of this chapter highlight areas of relevance to RQ2. In Category A, their experience with technology aspect of self-publishing was

considered a constraint that impacted the learners capability to progress through other stages of the learning process. However, only a minority of participants were unable to progress due to their focus on technology challenges, while the majority found strategies to address their issues. In particular, the engagement with MKOs as peer support had a profound effect on learners with low levels of self-efficacy related to technology capabilities.

Progression through the levels represented by the categories of description revealed the importance of metacognition and self-efficacy. Their self-representation in Category B explicitly pertained to their belief in their work as a contribution that others would value.

In the remaining categories, as support from MKOs shifted from transactional processing of tasks to connecting with others, so too did the learners' experiences and expectancy of being able to develop a network.

The hierarchy represented by the categories of description provides insight into areas where pedagogical attention can be asserted to enable learners to fully experience the development of the DLN learning environment.

The third iteration of data analysis that resulted in the DLN outcome space (see Part 3) provides the overall response to RQ2. Significantly, the learners' experiences of self-publishing (Section 5.3.2) had a profound influence on their approach to learning tasks and posts written for their weblogs. These experiences, including their self-representation, their awareness of readers, the structuring of their learning content, the process of reflection and metacognition while writing publicly, and the role of MKOs were described by the learners as unique and valuable learning experiences.

Research Question 3 (RQ3): What were the participants' perceptions of the nature of their learning from online self-publishing?

All research participants, including those who struggled with the technology aspects reflected in Category A (Section 5.2.1), reported an enhanced learning experience and, as described in the DLN outcome space (Part 3), the descriptions from the learners outlined a range of learning actions that are not typically experienced in traditional learning environments.

Viewing the DLN as a learning environment (Section 5.3.1), central to the other expanding themes of awareness in the DLN outcome space, the participants described witnessing each other's learning experiences and being able to both participate and contribute to them. While some learners adopted roles as MKOs in various stages of the 5SPF, others used meaningful interactions to create a socially constructed learning context. The transition of roles and the descriptions of their learning context underpinned their perspectives of their weblogs beyond the view of the technology as a tool.

Similar to RQ2, the experience of self-publishing (see Section 5.3.2) in the DLN environment afforded the learners opportunities to enhance the effectiveness of their learning. In particular, aspects that were highlighted included collaborative learning and knowledge sharing with their classmates in ways they described as not being possible with existing LMS-based discussion forums, or group-based projects. The structural process of organising their learning content, or personal information, was also cited as a method that assisted not only their own learning but also identified the awareness of organising content to make their weblogs more readable by others.

The value of building relationships, when learning in a networked context, was realised by the majority of participants as an active process of sharing. Through the self-publishing process, the learners depicted ways in which the relationships created in their networks differed from other learning experiences.

The validation of qualitative data was substantiated through the SFS results (see Section 5.1.8), collected and analysed independently by the university, where the overall subject scores and the results of specific subject-related questions confirmed the positive impact of learning in a DLN.

The review of the research questions and location of responses within this chapter allows a view of the study across the methodological framework and data analysis process that demonstrates the extent and richness of the data collected. The variation in the learners' experiences and the pedagogical approaches has reinforced the value of not only learning in a DLN, but also the need for a strategic approach supported by the 5SPF.

5.5 Limitations of the study

The study has produced significant insights into the learners' experiences of self-publishing and learning in an online network. Even so, the study has limitations that were discussed above in Chapter One, Section 1.3.4, but are valuable to highlight and reconsider further in the context of the findings and future research projects of this nature.

- **Scale of the study:**

  The study was conducted across four different cohorts of students in the same faculty, three of which were completing undergraduate degrees and the fourth a vocational qualification. The total number of research participants across the groups was sixty, approximately two thirds of enrolled students (see Chapter Four, Section 4.4.2, Research participants). It could be asserted that the number of participants was small with a consequent limitation on the range of findings. However, the original design of the research methodological framework and the richness of the data collected, highlighted throughout this chapter, have arguably provided a depth of findings and outcomes that a traditional qualitative or quantitative study would not have achieved.

  In addition, the inclusion of the phenomenographic approach for data analysis reviewed the diverse range of data sets as a collective to determine critical themes that influenced the experience of the phenomenon being studied. The variations in the research participants' experiences informed the categories of description that feasibly, if the study were to be extended to a larger group, would produce comparable results. This expectation is based upon the variety of data types, the richness of the data content, the researcher's experience as an educator, and reports from similar studies conducted.

- **Duration of the study:**

  The study was conducted over a timeframe that was limited to a single semester of thirteen weeks. A longer-term application to evaluate the DLN as a sustainable learning environment across more than a single subject and for a prolonged period would be recommended for future studies. (See Part 3, Section 5.3.3, The 5SPF as an enabler for creating a DLN.) Similar studies conducted have also

been limited to the same time constraints, so it is difficult to assess the feasibility/expected outcomes of a longitudinal study.

- **Generalisation:**

  The repeatability of the study, based on the implementation of the 5SPF and methodological framework, would be straightforward to carry out, as the 5SPF has always intended to be a replicable pedagogical framework for educators, not just the researcher. The categories of description and DLN outcome space that emerged from the findings indicate the pedagogical strategies outlined in the 5SPF would provide sufficient guidelines for other educators to implement the processes outlined.

  However, as indicated in the DLN outcome space, the role of the Connected Educator (Section 5.3.4) requires the educator to adapt traditional practices and shift their mind-set to fully enable the learners to accomplish the learning tasks and fully experience the DLN as a learning environment.

The limitations identified in the research project are not considered substantial enough to diminish the findings and results; rather they could be considered recommendations for future research studies to incorporate.

5.6 Conclusion

The 5SPF pedagogical framework was used to create a teaching and learning environment where meaningful data could be collected about the application of a pedagogical framework for the use of developing learning networks in higher education.

The results indicate the critical features required to enable the development of capabilities for learners to self-publish and become active participants in a DLN.

The key findings presented in the DLN outcome space identified the expanding themes of awareness and indicate areas for further developments of a pedagogical framework for application in contemporary learning contexts.

Despite the fact that the study was conducted in 2005 when social software applications were less sophisticated than those currently available, the findings have been reviewed against more recent studies and indicate the validity of the 5SPF and pedagogical approach. As signified in the DLN outcome space, the 5SPF as an enabler for creating a DLN (Section 5.3.3) is as relevant in contemporary contexts as it was at the time of the study.

Notwithstanding the variation in the learners' experiences, the findings also revealed the pedagogical variations (Marton & Booth 1997) that indicate the need for educators to adjust their role from one of any of Baumgartner's (2004) three modes of teaching to the mind-set and capabilities of the Connected Educator (Section 5.3.4). Future capabilities for educators' professional development require the need for understanding the processes involved in the creation of an architecture of participation (O'Reilly 2003) which enhances the learning experiences and will enable deeper levels of learning within the rapidly evolving technological environment. This topic will be examined further in Chapter Six, Section 6.1.2 where the new role of the connected educator is considered against current models of practice.

The location of the researcher in the study, in the dual role of educator and researcher, has enabled the advantage of reviewing findings and implications from dual perspectives. The researcher acted as the investigator, determining methodologically sound approaches to the problem, but also as the educator, reflecting on the pedagogical implications in the findings to determine practical applications that can be integrated into both strategic and tactical approaches.

A theme of considerable significance that has emerged as a consequence of the span of time since the study was conducted in 2005 emphasises the role of technology in the study. The weblog software and associated social software platforms were in the early phases of development in 2005. YouTube launched late in 2005, Facebook and Twitter did not launch publicly until late 2006, and iPhones were first released in 2006. At the time, WordPress did not have a rich media editor which meant students had to HTML code to add pictures or any formatting such as headings and bullet points to their posts. In this context, the technology challenges experienced by the students were minimal and as described by the categories of description were not the significant factor for developing a DLN, nor was the technology the major focus of their learning

experiences. The learning experiences were influenced most by the act of self-publishing, the building of relationships with others, the collaborative learning and knowledge sharing – the technology was the enabler, not the principal object of the variation in their learning experiences.

In the next and final chapter, the findings from this chapter will be progressed to incorporate a contemporary perspective that will evaluate the implications of the study in a current and future-thinking context.

Chapter Six

Weblogs, Learning Networks and Pedagogy: Contemporary Perspectives and Implications

6.0 Introduction

This thesis has demonstrated how carefully designed research into the experiences of adult learners using self-publishing technologies has provided insights into the process and opportunities for distributed learning networks (DLNs) in adult educational contexts. The application of the systematic approach to understanding the learners' experience was shaped by the 5-Stage Pedagogical Framework (5SPF) (see Chapter Three, Part 2) to effectively integrate self-publishing with social software into the learners' environment.

The 5SPF formed an important foundation of the study affording the development of understandings around how the learners approached learning tasks and around their collective perceptions of their experiences for developing and learning within a DLN. While the dual role of the lecturer as researcher also proved to be highly important in terms of augmenting the findings through a unique perspective that enabled a long-term view across the entire timeframe of the study.

An original methodological research approach was designed to enable the collection of data in the online context (see Chapter Four). The extent of the findings verifies the potential to obtain rich data sources that provided insights which were plausibly more extensive than could have been achieved through traditional qualitative and quantitative research methods (see Chapter Five).

The data was analysed in three iterations using the phenomenographic method (see Chapter Four, Section 4.6) that produced three groups of findings. The first iteration of findings (Chapter Five, Part 1) was aligned with the stages in the 5SPF and includes participants' visualisations of their DLNs and quantitative results from student feedback surveys. Their cumulative approaches and perceptions were analysed to inform the second iteration of analysis.

The second iteration of findings, the categories of description (Chapter Five, Part 2), revealed a hierarchical structure to the learners' experiences. These categories of description represent the pedagogically significant stages learners experience as they developed their DLNs and characterise the intervention points for educators when introducing self-publishing technologies into learning environments.

The third iteration of findings drew upon the data to identify expanding themes of awareness, from the perspective of a collective group of learners, to produce the DLN outcome space (Chapter Five, Part 3). The emerging themes in the DLN outcome space: the DLN as a learning environment; the learners' experience of self-publishing; the 5SPF as an enabler; and the Connected Educator as the catalyst have all been distilled to prioritise the major contributions from the research that will be used in this final chapter to generate a contemporary viewpoint.

At the time of writing this final chapter of the thesis, higher education is in the midst of a disruptive state with new technological developments, including the use of personal devices such as smartphones and tablets, questioning the relevance of institutional platforms such as the LMS; challenges to current funding models requiring in some cases a total review of economic viability of course offerings; the phenomenal rise of the massive open online courses (MOOCs) challenging the status quo of on-site campus education models (Watters 2012); unfulfilled student expectations of higher education leading to lower levels of enrolments and higher levels of dropouts; and frustration from employers as graduates are not meeting their expectations in terms of capabilities. All this in a global context that is experiencing disruptive economic, political, and societal changes (Brown 2013; Dua 2013; Johnson et al. 2012; Oblinger 2013).

The research that forms the basis of this study emerged from the eLearning field of practice (as outlined in Chapter One), and the findings were based upon the social software capabilities of that time (see Figure 1.5 and Chapter Two for more detail). The educational context and the use of self-publishing with social software, in particular the use of weblogs, was in early stages of adoption with small case study-based research informing further interest by a minority of educators (see Chapter Two). While there was limited uptake of self-publishing at that time, eLearning continued to be a growth industry with the LMS-led approach dominating the market. Many studies at the time, and continuing to the current context, focused on the capabilities of software to deliver

learning materials and content to learners with limited attention paid to the unrealised potential offered by social software (Anderson 2008b; Conole 2013). These studies frequently adopt a quantitative approach, analysing activity or participation levels, without examining the pedagogical benefits or the learners' experiences.

At this point, it is timely to reflect on the disruptive state of social technologies in the contemporary context as our educational institutions and organisations espouse the values of student engagement and informal learning, and prioritise practices of collaboration, reflection, personalisation, knowledge sharing and networks into vision statements and strategic planning documents, but remain focused on administrative efficiencies and productivity gains. As early as 2005, reports were predicting these disruptive changes would have an impact by 2020 – yet in 2013 we are still in a state of uncertainty, with little apparent advances in practice or integration of social software in educational settings (Conole 2013; Oblinger 2013; Watson et al. 2013; Weller 2011; Weller & Dalziel 2009). Subsequently, the findings from this study have been applied to the current educational landscape where the fundamental changes occurring in social technologies emerging since 2005 have been amplified and expanded in 2013.

Notwithstanding the importance of emergent technologies as the enabler in these processes, the findings from this study indicate that without re-framing our educational practices and becoming aware of the critical pedagogical aspects described by the qualitatively different ways adult learners experience the use of self-publishing technologies, educators and their institutions are not likely to realise the opportunities afforded by adopting social software in learning environments. In particular, both the learner and educator require substantial shifts in the mind-sets and support to achieve the value that can be demonstrated with the use of social technologies in learning contexts.

Reflecting upon the journey of the research study, it has become apparent from a practitioner's perspective that many of our approaches to teaching and learning have been developed under circumstances that represent a totally different educational landscape. The current shift into a social, digital age constitutes one of the fundamental changes to society as a whole, where existing educational practices are no longer sufficient to meet the needs of learners (Anderson 2008b; Conole 2013; Downes 2010a,

2010b; Kerawalla et al. 2008; Siemens & Tittenberger 2009; Stoerger 2013; Weller 2011).

This final chapter has intentionally not been titled 'Conclusion' to avoid creating an impression of an 'end state' to the research and to encourage the continuation of the major contributions to be reflected against current educational issues. As a consequence, the chapter will review the major contributions from the study and layer those over the current adult education landscape to substantiate their relevance and applicability to present practices (see Section 6.1).

Section 6.2 in this chapter will highlight areas for potential future research scenarios that reflect both advancements in social software capabilities, but also the further developments in the body of knowledge developing in the field of educational research and self-publishing technologies. It is not about predictions; it is about implications from the research findings that can be associated with contemporary trends and emerging practices.

Finally, the chapter will finish with a summary (Section 6.3) that encapsulates this research study and the journey of the researcher to bring to a close the thesis, while intending to open up further opportunities to continue the investigation into the phenomena enabled by social technologies in our educational futures.

6.1 Major contributions and contemporary perspectives

> *"Teaching is more difficult than learning because what teaching calls for is this: to let learn."*

Hiedegger, 1968, p.15

The major contributions identified from the findings that remain significant today focus less on the specifics of technology capabilities and more on the relationship between the learners' experiences and the enabling pedagogical processes, including the role of the educator, that would enhance current practises.

Firstly, the learners' experience of self-publishing (as outlined in the findings, Chapter Five, Section 5.3.2) provides insight into the significant impact of online learning activities in a situated, socially constructed context, including meaningful interactions within a networked environment.

Secondly, the role of the Connected Educator (as outlined in the findings, Chapter Five, Section 5.3.4) appears to be more essential in the current dynamic environment than when the study was conducted.

Thirdly, the value of the 5SPF as an enabling framework for both learners and educators (as outlined in the findings, Chapter Five, Section 5.3.3) has maintained both currency and relevance due to its focus on the pedagogical aspects of integrating social software, rather than the technical features, which are continually changing.

Finally, the importance of applying rigorous research practices to the current turbulent learning landscape is required to reflect methods that consider alternative data sources and analysis in a socially networked learning environment. Over the period of this research project, a significant amount of change has occurred in the development of social software and the capabilities of computing devices. However, there is comparatively less change apparent in the uptake of self-publishing and innovation in educational contexts with implementations remaining ad hoc and not informed by previous research findings from publications.

Each of these contributions will be reviewed below and respective, relevant contemporary perspectives will be considered to demonstrate the value of the findings in current adult education contexts.

6.1.1 The learners' experience of self-publishing

The findings from investigating the learners' experiences of self-publishing, as outlined in Chapter Five, Section 5.3.2, have provided significant insight into the value of the pedagogical framework, the 5SPF, in the successful achievement of outcomes by the learners. The framework facilitated learning by scaffolding activities that managed the initial unease and discomfort of self-publishing and use of unfamiliar software, through their growth and development of reflective, critical thinking activities to the

establishment of DLNs where collaborative learning and participatory behaviours created rewarding learning experiences.

Factors highlighted by the learners included the interdependence between the processes of self-representation and building relationships, which necessitated participatory actions that used feedback to create a motivational loop to reinforce positive levels of self-efficacy. Their learning environments had become extended beyond the dichotomy of learner and educator to include MKOs (Vygotsky 1978), who were not necessarily involved in the subject-related learning context. The learners were participating in a socially negotiated context through the intentional actions of self-publishing content, collaborating and sharing knowledge across a diverse landscape of learning opportunities they described as not being possible with existing LMS-based discussion forums.

Current studies into student attitudes (Dahlstrom 2012; Dua 2013; Johnson et al. 2013; Gosper et al. 2013) overwhelmingly indicate their desire for more use of social technologies in their learning activities. However, as shown in this study, without a carefully planned pedagogical approach there is a risk that providing learners access to these software options without support and guidance will have disappointing results.

Similarly, the ability of learners to both personalise and manage content has been noted as having a disruptive impact on the current behaviours of students (Dua 2013; Siemens & Tittenberger 2009;). Yet this could be viewed through an alternative lens, as indicated by this study, which demonstrates the learners' desire to control their learning environment through self-publishing actions and the positive experiences related to collaborative learning and enhanced self-regulatory behaviours.

There is a relationship between the learners' actions described above, to personalise and manage content that supports the inclusion of ePortfolios and personal learning environments (PLEs) (Aresta et al. 2013; Atwell 2007, 2010), as referred to in Chapter Two, Section 2.2.3, which align with the findings in this study. The learners' weblogs in this study could be described as a PLE; however, the design of ePortfolios and PLEs is by definition focused on the individual rather than on creating a collaborative, socially constructed learning network. The insights collected from learners participating in their networks during this study indicated greater value was gained through the experiences

of sharing with others, supporting the proposition to further extend the PLE concept to become the focus on a more networked approach to learning.

Alternatively, the perspective of self-publishing could be viewed through the current uptake of MOOCs where access to quality content is becoming an increasing trend as people participate in programs of interest or relevance. The design of xMOOCs represented by consortia such as EdX, Coursera, and Udacity can be viewed as an economic-rationalist model reminiscent of the early eLearning initiatives to produce content at scale. Courses typically follow a behaviourist approach to learning, where instruction is divided into small manageable chunks of information supported by multiple-choice assessment to provide feedback, with little or no interaction between learners or lecturers (Brown 2013; Hill 2012).

The limited studies of learners' experiences have not been widely published to date, but indicate overwhelmingly that their experiences support the need for effective pedagogical design that focuses on engaging, challenging, participatory learning contexts (Veletsianos 2013). This study has demonstrated that the real value of implementing such innovations cannot be realised without a carefully thought through pedagogical framework based on shaping self-publishing and participatory actions in a learning network. If MOOCs are to become sustainable they will need to undergo an intentional shift in the pedagogical approach towards a framework that scaffolds and supports learners to create learning networks.

The learners' experience of self-publishing has been underpinned by a pedagogical framework that enabled the development of DLNs; however, critical to the application of the framework is the role of the Connected Educator. In the following section, the impact of the educator and their role in the learners' experiences will be related to the contemporary learning landscape.

6.1.2 The role of the Connected Educator

The findings from this study identified an inadequacy in the teaching approaches that had underpinned the role of the educator in the 5SPF. The application of a traditional online teaching approach could have resulted in substantial negative impact on the

learners' ability to establish behaviours to successfully participate in their DLN (see Chapter Five, Section 5.3.4).

To allow for the integration of self-publishing technologies and the creation of DLNs, there is a need for educators to re-frame their pedagogical methods. At the same time, shifting their mind-set from one of teacher towards becoming a Connected Educator, further enabling greater capabilities for learners to extend their learning opportunities in a networked environment. The core attributes are not defined by a skill-set or a list of tasks but by the adoption of roles and a mind-set that are flexibly interconnected to the context of the learners.

The limitations of the existing teaching approaches that had informed the 5SPF, (Baumgartner 2004; Salmon 2000) related directly to a shift in mind-set to embrace a strategic network-thinking which challenged existing practices of teaching, from didactic instruction, to facilitation, to informal coaching or guides. Key points of departure from the core teaching attributes described by Baumgartner's (2004) modes of traditional teaching methods are outlined Table 5.4, which provides a comparative perspective. An additional core attribute was identified that had not been specifically addressed by other models, i.e. learner capabilities, where intentional educator behaviours are focused towards enabling social, self-regulatory and technically adept learners.

Several educators have published their perspectives since this study was conducted that align with the findings. Brown (2006) describes 'Atelier Learning' as a model from artists or architects. Brown (2006) likens the style of open, shared environment to students working on weblogs, where feedback and insight is encouraged from instructors and fellow students. However, the concepts of expert and directed instruction are still apparent, reinforcing the traditional master-apprentice style relationship.

Bonk (2007), on the other hand, describes the role of the educator in terms of a hotel concierge, directing learners to resources or opportunities, with occasional inclusions of traditional practices such as lectures. Emphasising more of the informal guide approach taken from Baumgartner's (2004) Mode 3, Bonk (2007) appears to be leveraging the readily accessible information from the internet, rather than altering the learner's experience of actively collaborating and self-publishing.

Alternatively, Siemens (2007) describes the educator as a curator, an expert learner who creates spaces where knowledge can be created, shared, explored, and connected. The emphasis is not on expertise, rather on empowering learners with thoughtful interactions. Siemens' (2007) curator aligns with his Connectivism theory (see Section 6.2.2). The concepts appear to closely associate with the Connected Educator findings; however, Siemens has not published widely on the role of the educator, making it challenging to fully evaluate the alignment.

From the perspective of students, a recent study from the Educause Center for Applied Research (ECAR) (Dahlstrom 2012) provides valuable insight into the opinions of undergraduate students. Significantly, the key findings indicate that students expressed the expectation that their lecturers would understand which technologies were more or less effective and to use those selections with a strategic pedagogical approach.

However, there is an inconsistency in the professional development of educators where traditional pedagogies dominate the way we develop educators, with technologies referred to as part of a tool kit and mastery of software the intended outcome (Sharples et al. 2012; Siemens & Tittenberger 2009; Watson et al. 2013). Nevertheless, the latest Horizon report (Johnson et al. 2013) for Australian tertiary education 2013-2018 cites digital literacy training as inadequate with a need for mind-set changes across all disciplines and faculties before any widespread adoption of emerging technologies will be experienced.

Furthermore, there are calls in current literature for programs to promote research into new and emerging technologies and innovation embracing those, while focusing on the role of the educator as a change agent (Czerkawski & Hernandez 2013; Keengwe, Kidd, & Kyei-Blankson 2009; Stoerger 2013).

Perhaps of greater significance are the top three challenges identified in the 'Technology Outlook for Australian Tertiary Education' over the five-year period from 2013 to 2018:

- Faculty training still does not acknowledge digital literacy as a key skill in every discipline.

- Most academics are not using new or emerging technologies for teaching,

nor their own research practices.

- Personalised learning is not adequately supported by current technologies.

(Johnson et al. 2013)

Taking these challenges into account, the application of the Connected Educator approach in practice becomes an essential component of any program design for learning with web-based technologies. Yet, as noted in the previous section, the role of the educator in the xMOOC can be viewed as the creator of content and assessment tasks, sometimes delivering content by pre-recorded video. An educator in the large consortia xMOOCs cannot be expected to engage with thousands of learners through an online platform. Even the most experienced, self-directed learners are struggling to complete these courses. The findings of this study indicate that without the presence of a Connected Educator even the most experienced, self-directed learners will struggle to complete courses of this nature or alternatively will drop out, implied by completion rates that are quoted in the range of 10-20% (Brown 2013).

Alternatively, in the cMOOC, a model that favours a pedagogical approach associated with Siemens' (2005) Connectivism theory (see Section 6.2.2), the educator is viewed as a co-learner, working collaboratively to create content, shape goals and learning objectives, and generate new knowledge (Crowley 2013). The central educators (frequently subject matter experts) manage the content aspects, while the peer network of connections support the smaller sized cohorts (Towndrow, Aranguiz & Purser 2013).

The approach to MOOCs aligned with this study would envisage the Connected Educator essential in a pedagogical design, managing meaningful interactions with MKOs in a similar approach to the cMOOC. The number of enrolments challenges the scalability of MKOs and the Connected Educator, but to attain valuable learning a ratio of 1:150 can be manageable (Rheingold & Alexander 2013).

The significance of the Connected Educator is fundamental to enabling the learners' experiences and the successful application of the pedagogical framework, the 5SPF. Active participation and experimentation are required to underpin an educator's mind-set as the need for flexibility, sense-making, and critical reflection become routine practices to understand the needs of learners as they struggle to manage the changing

contextual landscape. Yet there remains little attention or resources being expended on providing more than training limited to the use of technology as a tool – rather than creating a disposition that supports their role in socially networked learning environments.

6.1.3 The 5-Stage Pedagogical Framework as an enabler

In the previous sections the significant contributions identified addressed the learners' experience of self-publishing and the role of the educator in a socially networked learning environment. The data that formed the basis for these contributions were gathered in a teaching and learning environment that was created through the 5SPF. This framework was specifically designed to ensure that the variation in the learners' experiences were pedagogically managed to optimise the opportunities within the network learning environment. In this environment it was possible for the lecturer as researcher to focus on and document the scaffolding and support needed by the students.

The findings from the research project uncovered capabilities that are required for the new learning landscapes, which have been hierarchically outlined as the categories of description in Chapter Five, Part 2. These categories illustrate the challenges faced by learners as they sought to complete the learning activities. At each category, insufficient guidance could result in learners becoming disengaged or abstaining from further participatory actions. In the current education landscape, the importance of supporting learners with online-networked environments is arguably more critical than it was at the time this study was conducted.

Recent publications and faculty guidelines focus on the social technologies as tools (Bingham & Conner 2010; Johnson et al. 2012; Mason & Rennie 2008; Weller 2011) listing the features available and what they can be used for with very little attention being paid to the pedagogical activities or guidance for educators. The current literature, cited above, about the use of social technologies and networked learning continues to overlook this fundamental element that supports the learners successfully achieving their outcomes.

Dahlstrom (2012) warned that the assumption that students know how to use technology as an academic tool is flawed (see Section 6.2.1 for further discussion). The technical capability of students is over-estimated, while a pre-requisite for the introduction of technologies in academic environments is adequate support and guidance from academic staff.

Pedagogical strategies that do not adapt to the shifting models in education contexts will manifest themselves as redundant practices, resulting in further disengagement of learners and placing further strains on sustaining viable financial models for institutions and organisations.

Little attention has been expended on pedagogical frameworks for the current evolving technological landscape. There are, however, some papers emerging that are progressing the discourse on xMOOCs (Guardia, Maina, Sangra 2013; Koutropoulos 2013; Stacey 2013), while more prominent issues such as smartphones as a learning environment are being confronted by bring your own device (BYOD) presenting campus infrastructures with security and support pressures (O'Neil 2013; Winske 2013).

Nonetheless, the expectation that all learners are self-directed and autonomous and possess effective metacognitive, critical reflective thinking and writing skills to effectively manage the challenges in learning environments is in direct contradiction of the findings of the learners' experiences in this study. When presented with novel concepts, or new technological learning environments, the importance of a pedagogical framework that scaffolds the learner through the initial stages of unease and uncertainty become self-evident.

In the contemporary educational context, there exists the potential to effectively integrate new social technologies by paying attention to the capabilities of learners and using a pedagogical framework that is designed to scaffold the learners' experiences and ensure successful outcomes are achieved. However, the pedagogical frameworks, as was the case in this study, require intentional research and design that incorporates engagement with current literature and feedback from others in similar fields.

6.1.4 The research methodological framework

The original design of the methodological framework for this study (as described in Chapter Four) was developed in a context of an emerging research field of educational web-based technologies and pedagogical practices. Consideration of the research setting, located online in the socially constructed participants' weblogs, was critical to investigate the learners' collective experience of self-publishing.

A non-traditional approach to researching the online context required scrutiny of the extent of available data types. Their weblogs provided a plentiful supply of options that revealed substantially more insights into the learners' experience than traditional qualitative face-to-face interview methods.

The analysis of the selected data sources also required a non-traditional approach that led to the selection of phenomenographic methods to determine the collective experience of the learners. The phenomenographic analysis produced a considerable amount of data, which at each iteration has revealed valuable findings that could be usefully applied to a diverse range of teaching and learning practices (as described in Chapter Five).

Other research studies conducted more recently have used innovative approaches to investigate participatory behaviours in social networks through digital ethnography (boyd 2008; Murthy 2008), however there are many studies still deploying traditional qualitative methods such as face-to-face interviews, but blended with some analysis of online activity (Hooley et al. 2012; Koole & Parchoma 2013; Stoerger 2013; Veletsianos & Navarrete 2012).

Publications available on alternative approaches to online social contexts are still not extensive, with little evidence that the type of approach used in this study has been replicated elsewhere. Yet, the substantial changes in the learning context from both a technological and institutional perspective are shaping the way we engage with learning. These changes should also be reflected in the ways we approach research design and methods.

As new social technologies emerge, social researchers need to respond with new, innovative methodological research frameworks. These methods need to consider the

available data sources in the socially networked environment where simply collecting responses to questions posted online, or conducting face-to-face interviews of focus groups will fail to take advantage of the potential richness of the context and the inter-connectedness of the data.

The contemporary higher education learning landscape is conceivably facing more disruption than was apparent during the initial stages of emerging social technologies being introduced into teaching and learning contexts. However, this section has shown that the major contributions of this research study can provide a framework that advances the field of practice. Through a carefully designed pedagogical approach, the learners' experiences can be enhanced by the introduction of self-publishing technologies, such as weblogs, and participation in learning networks. The role of the educator is critical to the pedagogical approach and requires resources and commitment if the highlighted strategies for innovation and practice are to be realised. In addition, a robust research practice is imperative to contribute further to the body of knowledge.

In the next section, future research scenarios will be explored and concepts for ongoing research will be proposed.

6.2 Future research scenarios

The following section locates the major contributions and implications from this study in relation to the contemporary literature and identifies future research scenarios that would extend and contribute further to the current perspectives and practices.

The first scenario, social literacy (Section 6.2.1), is a requirement that has been identified and frequently assumed as a given capability or proficiency of learners in current social technological landscapes. By understanding the learners' experiences of self-publishing and creating DLNs, this study has revealed capabilities that require pedagogical attention if learners are to successfully adopt socially constructed learning environments.

Secondly, new theories and pedagogies for self-publishing and networked learning (Section 6.2.2) will reflect the current status and project future thinking and research that will be required to remain relevant in an era of rapid technological change.

And finally, new and emerging technologies (Section 6.2.3) will review the future research scenarios based on the evolving technology landscape. Both software and devices are included as smartphones, tablets, and wearable devices present new challenges for pedagogical practices.

6.2.1 Social literacy

The findings from this study indicated (see Section 6.1.1) that all learners, when confronted with new software or different ways to use it, experienced varying levels of discomfort and resistance, which without the support from the pedagogical framework are likely not to have proceeded with the learning activities.

It could be assumed that learners, in particular the younger generations of adults in the contemporary context, are more social network savvy and fluent in the use of social technologies than the research participants when this study was conducted (see Chapter Four, Table 4.1 for demographics). The expectation or myth regarding the technical and social networking capabilities of the so-called 'digital native' has also been debunked by recent studies that additionally highlighted their inability to transpose their assumed prowess into productive learning behaviours (Bennett, Maton & Kervin 2008; Margaryan, Littlejohn & Vojt 2010; Thompson 2013). Significantly, these studies identified behaviours that were influenced by the attitude towards and use of the learning technologies of their lecturers – an issue that reflects the premise of the Connected Educator in Section 6.1.2 of this chapter.

A number of learner capabilities were identified and addressed in this study through the design of the 5SPF and inclusion of social learning theory perspectives, such as the development of self-efficacy (Bandura 1977a, 1997), metacognitive awareness, knowledge sharing and collaborative learning approaches enhanced through MKOs (Vygotsky 1978), and online participatory behaviours (Lave & Wenger 1991). The development of technical capabilities was facilitated through the stages of the 5SPF, designed to work within the learners' ZPD (Vygotsky 1978). Additional required capabilities that were not apparent in the study which, considered in the contemporary context are arguably more critical, include digital literacy, digital identity, network

literacy, information literacy, and social networking literacies, along with further development of technical capabilities.

A review of current literature indicates the level of concern that is associated with internet usage and the effect this is having not just on educational contexts, but also on a broader societal situation. The abundance of information, freely available on the internet, has been noted to increase the pressure on individual learners, who are expected to distil quality resources, manage their attention and time limitations, while educators are attempting to create meaningful learning opportunities to meet their objectives (Bagley & Creswell 2013; boyd 2010; Weller 2011).

The necessity for critical thinking skills (Brookfield 1987; 2008) to address the quantity and quality of information embedded in the 5SPF learning activities, however, and the necessity to expand these skills to include the associated knowledge management literacies are now considered essential in current contexts not only for students but also for educators (Moravec 2013; Pettenati et al. 2009; Plomp 2013).

At the time of the study, an essential element of developing and participating in a social network was identified as the personal profile created by the learners (see Chapter Three, Section 3.2.2). The 5SPF focused on assisting learners to construct their self-representation or digital identity and as outlined in the findings (Chapter Five), for some learners, this was a challenging task. Current studies validate the importance of digital identity and its role in social learning networks (Aresata et al. 2013; Code 2013; Williams et al. 2013). A future research scenario could extend these current studies and determine how digital identity connects with other elements of social literacy in the context of learning networks.

Rheingold (2010, 2012) distinguishes five literacies that correspond to the social literacy capabilities identified by this study: attention, participation, collaboration, critical consumption of information, and network smarts (or multi-faceted knowledge of how networks are structured). Underpinning these five literacies is a mindfulness or metacognitive process where he labels actions such as conscious distraction, infotention, curation, social production, and dataveillance. A future research scenario could investigate the process of facilitating the development of these literacies through

participation in social learning networks with the integration of learning activities in the stages of the 5SPF.

Additional future research scenarios could continue to investigate both the young generations of adult learners and also the older generations to determine how the social literacies described in this section impact the learners' capabilities in the self-publishing, socially networked learning environments. The results of these studies would add value to further understanding the influence on student experiences and their attitudes to learning. Concurrently, professional development for educators, informed by the research, creates an essential link to future capabilities for Connected Educators.

6.2.2 New theories and pedagogies for self-publishing and networked learning

The pedagogical approach adopted in this study was underpinned by social learning theories of Bandura (1977b, 1986, 1997), Vygotsky (1978), and Lave and Wenger (1991) because at that time no current theories of learning or pedagogies directly addressed the social learning network perspective. Subsequently, one of the most significant theoretical frameworks published regarding social networked learning was Siemens' (2005) Connectivism theory of learning. As highlighted in Chapter Three, Section 3.2.2, the pedagogical approach taken in this study is closely aligned to his theory.

Connectivism (Siemens 2005) has been extensively represented in publications and studies since 2005. More recent publications by Downes (2007b, 2010a, 2010b) expand on Siemens' (2005) thinking with additional work on connective knowledge and learning networks. The dissemination of Connectivism has been acknowledged with an entire issue of 'The International Review of Research in Open and Distance Learning' (IRRODL 2011) dedicated to studies and application of Connectivism.

The elements of Connectivism (Siemens 2005) where alignment is apparent in the design of the 5SPF relate to the focus on building and maintaining networks of connections, the interaction with information, and production of content. The pedagogical framework developed for this study, the 5SPF, complements the theoretical perspective for learning in a connected world as proposed by Siemens (2005) and could

be viewed as the pathway for learners to become effective in the conditions described by Connectivism.

Additional studies, many informed by Connectivism (Siemens 2005), have investigated aspects of learner behaviours noted in social learning networks (Dron & Anderson 2009; Kervin, Mantei, & Herrington 2009; Koole & Parchoma 2013; Martinez & Jajannathan 2010; Pettenati & Cigognini 2007; Ravenscroft et al. 2009; Tschofen & Mackness 2012; Veletsianos & Navarrete 2012; Voorn & Kommers 2013). The significance of these diverse studies is that they are building our understanding of learner behaviours and the ability to inform pedagogical approaches to learning in networks. Yet, few of these studies have embraced pedagogical approaches that augment the outcomes for a Connectivist (Siemens 2005) learner.

Future research scenarios to further advance our knowledge of learning in social networks could investigate these emerging behaviours and determine how they augment the principles of Connectivism (Siemens 2005). Of particular importance is the need to develop discourse that informs practice for educators, moving beyond the theory into practical pedagogical strategies that are adaptable to the educational context and learners.

As the technologies continue to emerge, further research scenarios would encourage educators to innovate and develop case studies of applications. Dissemination of these studies needs to increase with a requirement to avoid ongoing ad hoc implementations that repeat practices and research conducted previously, as experienced with the uptake of social technologies (see Chapter Two, Section 2.3, and discussion in this chapter).

Assessment strategies with self-publishing

In conjunction with the new theories and pedagogies for self-publishing and networked learning, we need to rethink the role of assessment and the relationship to learning processes, reviewing strategies for self-assessment, peer feedback, ePortfolios, and group work that encourage learning for the future and as an act of informing judgement through the process of self-publishing (Bartlett-Bragg 2008c; Boud & Falchikov 2007).

The assessment strategies designed to accompany the 5SPF included both formative and summative tasks. However, they were designed to acknowledge the process of self-

publishing and challenged the students to transfer conventional tasks, such as essay writing, into a publicly available internet environment (see Chapter Three, Part 2).

'Assessment 2.0', a term coined by Mason and Rennie (2008), calls for assessment to be a positive contribution to the overall learning process and justifies the need for a reframing of assessment by taking a learner-negotiated portfolio approach – not dissimilar to the approach in this study. Shaping the use of social software to provide learners with online spaces where they can interact, explore, and construct an individualised approach and manage their own authentic learning tasks (Anderson & Dron 2011; Attwell 2007; Bartlett-Bragg 2008c; Downes 2010a; Owen et al. 2006; Woo et al. 2007), new frameworks can be designed that evaluate information literacies, technology fluencies, and content mastery (Moore 2007).

A future research scenario would investigate assessment approaches that reflect and respond to new learning approaches and technological developments. If we are to foster the social literacies (Section 6.2.1) and knowledge sharing capabilities of learners, then we need to be prepared for one of the greatest challenges to education policy, an authentic assessment system that acknowledges the needs of 21st century learners (Owen et al. 2006). Reframing assessment is not solely about integrating software into the process of assessment; it is also about reviewing current philosophies and determining how assessment can cultivate new ways of learning.

6.2.3 New and emerging technologies

The weblog was selected as the foundational basis for this study to enable the development of DLNs, as described in Chapter Two, Section 2.2.2. At that time, it was the most appropriate choice; however, although the weblog has increased in versatility, ease of use, and features, there are many new types of technologies or combinations of software that could achieve similar outcomes. This section will review some of the new and emerging technologies to highlight how future research scenarios, based on the significant contributions from this study, could be shaped.

Since the initial introduction of weblogs as an educational platform of note, as overviewed in Chapter Two, Section 2.3, there has been a reduction in the number of

current publications into the use of weblogs. This does not indicate a reduction in the use of weblogs; instead, it is more likely to represent a shift in attention given to studies that examine the potential of newer technologies and innovative practices.

Notably, a number of current weblog studies (Beuschel 2009; Gullett & Bhandar 2012; Kervin, Mantei & Herrington 2009; Munday 2013) have implemented them in a manner that has applied traditional pedagogical practices to the new platform, such as the weblog as a group discussion board (Gullet & Bhandar 2012), and report little or no positive recommendations for future use. These findings mirror studies conducted around 2004 (Dickey 2004) (see Chapter Two, Section 2.3) and could indicate that the advancement in the use of weblogs has yet to be realised or that the Diffusion of Innovation (DoI) theory introduced in Chapter Two remains in the early stages of adoption.

From the late 1990s the focus on educational web-based technologies had been dominated by software and a comparison of its features, strategies for adoption, use of software as a tool for distributing content, and pedagogical methods for inclusion in teaching and learning (Siemens & Tittenberger 2009). However, a subtle change was experienced with the introduction of the iPhone and related web-enabled smartphone devices in 2007. The current rate of adoption and attentional shift is now about devices and the new behaviours they enable (Meeker & Wu 2013).

These mobile devices, now including tablets, are totally changing the way we approach many common computing tasks. And next are the wearable technologies, such as Google Glasses, that are in their early introductory phases before being released to the consumer market. Educators are already experimenting with their application, providing exciting opportunities. For example, a surgeon in the United States sent live images of surgery through videoconference software embedded in the Google glasses to students on their laptops in dispersed locations (Ramachandran 2013).

The most recent Horizon report on Australian tertiary education 2013-2018 (Johnson et al. 2013) forecast technologies that will have the most potential impact in the next twelve months includes mobile learning and social media with the underpinning key trend in the next year based upon the premise that 'people expect to be able to work, learn, and study whenever and wherever they want' (Johnson et al. 2013, p. 2). This is

not a new trend and one that has been cited in the early 2000s relating to eLearning initiatives (see Chapter Two, Section 2.1.1).

Social media

The focus of social media in the report (Johnson et al. 2013) predominantly refers to popular public social networks such as Facebook, YouTube, Twitter, and others, based on students being prolific creators of content and leveraging that behaviour to engage in dialogue with other students, educators, the institution or prospective students. The nature of this use of social media is undervaluing the capacity of self-publishing to be a powerful learning opportunity and focusing on the popular social networks does not take into account the potential of self-publishing as an alternative learning environment as demonstrated in this study. Attempting to engage with students in their public social networks may further inhibit the use and proliferation of deeper learning activities, which are not effectively enabled on social networks that are designed for other purposes.

Proliferation of mobile devices

Learning with mobile devices or mlearning is predicted to increase in adoption over the next twelve months (Johnson et al. 2013), with the inclusion of social features extending the current social learning network context.

Current research studies (Kearney et al. 2012; Stoerger 2013) have already identified how mobile devices are altering the students' experiences; how they connect, and the types of interactions they engage in, accelerating the need for pedagogical approaches that include the location-based factors and the exciting opportunities to design activities that shift learning into the user-controlled, situational environments not previously enabled with desk top or laptop computing (Kearney et al. 2012).

New technologies come and go – and a healthy scepticism is part of critical reflection in a research context. When this study was conducted, self-publishing technologies were relatively new, and even the learners were sceptical of weblogs, illustrated by the following comment from one of the research participants:

> *'Why do I need to do this – I'm never going to use a blog again!'* (Wkly/CF)

Now however, the weblog is acknowledged as one of the most powerful web-publishing technologies used throughout all the areas of online publishing.

Future research scenarios would add value through the investigation of the learners' experiences; how they use the technology in their personal lives, what features could be useful in a learning environment, and provide insight into pedagogical approaches that pay attention to the situational context to enable the creation of meaningful interactions with new and emerging technologies. Additionally, as the new mobile devices increase in sophistication, there are opportunities for new approaches to research methodologies that include contextual, location sensitive data, or new types of data and collection methods. The advancement of socially networked learning research is considered critical as these new devices become ubiquitous and pedagogical approaches shift to provide guidance to novel learning contexts.

The future research scenarios identified through this study point out some potential areas that could progress the knowledge developed from the findings in this study. The need for faculty support to participate in research and continue to evaluate how higher educational institutions can better understand the value of integrating emerging technologies is an essential step towards advancing our connection with a rapidly changing educational landscape.

6.3 Summary: Revisiting technological innovations in learning

We live in a constantly changing world, accelerating change, so we need to develop pedagogical models that don't give precise instructions about how to behave in life, but instead give the capacity for people to reorganise their lives without being the structure in the constant transformation of the living environment.

(Castells 2010, p. 4)

The results from this research study have demonstrated that an approach which uses a pedagogical framework carefully designed and based on learner experiences can assist learners to adapt to new ways of thinking, learning, and doing by scaffolding activities for both the use of technology and subject related content.

This chapter has summarised the findings and distilled the major contributions to advance the discussion of self-publishing, learning in networks, and pedagogy into the contemporary adult learning environment. These contributions have withstood the changes experienced over the past decade of technological innovation, emergent learning theories, and pedagogical practices to be as relevant today as they were when the study was conducted in 2005.

Writing a thesis during the midst of disruptive technological change is not without challenges. Observations made today as notable may be reviewed in just a few years time as insignificant or have created little or no change to practice and behaviour. Technology changes, in particular the current release of new mobile devices, are occurring so rapidly that it can be easy to overlook the fundamental shifts in learner behaviour. Constant critical reflection on practice, combined with observation and monitoring of changes to learner behaviour, is how they are experiencing learning, and their use of technology is now an essential element of practice for educators and researchers.

Adult learning towards the end of the 20th century was characterised by a shift from didactic approaches that focused on the transmission of knowledge and skills to an active learner-centred focus (Brown & Adler 2008; Scardamalia & Bereiter 2006). The last decade of the 20th century and early years of 21st century heralded a rapid growth in web-based, collaborative environments, now commonly referred to as Web 2.0 or social software (see Chapter 1, Section 1.5 Timeline of social software and research study). Despite this, face-to-face learning environments are still the primary mode of delivery, although somewhat extended to include online platforms such as the LMS. The adoption levels of social technologies are limited and vary according to factors such as: field or discipline; educators' preferences; educator's perception of technology; availability of technology; and students' expectations, as perceived by the educator (Coldwell-Neilson 2013; Thomas & Brown 2011).

The current disconnect between learners' expectations and staff capabilities are a symptom of the disruptive nature of technological change with the Connected Educator, as described by this study, bringing into focus contemporary issues that remain unresolved. Educators who dismiss learning with social networks and associated self-publishing technologies as just a fad, demanding results that unequivocally demonstrate

improved learning outcomes, are opting for a model of learning that is no longer sustainable in a fast changing, information rich, networked environment.

Inevitable tensions between economic sustainability, learner expectations, technological developments, and educators will continue as key determinants of pedagogical approaches. In the current context, it cannot be assumed that educational institutions, curriculum designers, educators or indeed individual students know what will be the most appropriate pathways.

While not every emerging new technology will alter the education landscape, some have the potential to disrupt the status quo, alter the way we learn and the way we educate (Manyika et al. 2013). This study has shown that a practice of continual robust research is required to underpin informed decisions that prevent repeated ad hoc implementations that produce outcomes with limited, if any, improvement and learner engagement. Pedagogical strategies that do not adapt to the shifting models in education contexts will manifest themselves as redundant practices, resulting in further disengagement of learners and placing further strains on sustaining viable financial models for institutions and organisations.

Overall, I am optimistic for the future of learning through self-publishing and learning networks. But it is not about the technology. It is about how we embrace innovation and change, and challenge our educational assumptions and philosophies. We are beyond the early hype stages of self-publishing as a fad with weblogs as a publishing platform being ubiquitous in every aspect of our personal and business lives, it is time the powerful learning opportunities afforded through self-publishing and social learning networks become ubiquitous in educational settings.

As educators, our responsibility lies with the creation and development of learning. While technology is providing radical new opportunities, simply embedding computers and software applications into our existing pedagogical practices will not be sufficient. We need a more creative approach, not one that simply or directly replicates, renovates or reinforces traditional models of didactic teaching.

A clear commitment to implementing pedagogical strategies that are underpinned by the application of theoretical frameworks and research is to be encouraged if we, as practitioners and researchers, are to fully and responsibly enhance the opportunities

presented by the dynamics of personalised, collaborative learning environments. Education must not be considered a location anymore – it must become an activity, discretely embedded in the lifestyles of our learners.

Appendices

Appendix 1: List of conference presentations

The following list of conference presentations includes academic refereed, vocational education sector, organisational learning and professional practice sessions that have contributed to my critical reflective practice.

2003
BlogTalk 2003
Vienna, Austria, 23–24 May 2003
Participation

e-Learning: A Virtual Promise?
Glasgow, Scotland, 2–4 July 2003
Presented two papers – 4th International Conference on Human-System Learning

2004
BlogTalk 2.0 conference
Vienna, Austria, 5-6 July 2004
Participation

Blogs & Literacy
Sydney, NSW, 30 October 2004
2 x 2 hour workshop for the Centre for Language and Literacy in the Faculty of Education, UTS

'Blog to Learn, Learn to Blog'
Sydney, NSW, 2 November 2004
e-Change workshop, 1 hour workshop for UTS Education faculty on the use of weblogs

Learning Technologies conference
Gold Coast, QLD, 8 – 10 November 2004
Pre-conference workshop

ICCE 2004 (International Conference on Computers in Education)
Melbourne, VIC, 30 November – 3 December 2004
Attendance only

2005
UTS Education Faculty Research Conference
Sydney, NSW, 18 – 19 March 2005
Presented paper

BlogTalk Downunder conference
Sydney, NSW, 19 – 22 May 2005
Convenor

Flexible Learning Network of Australia - 'Cool Results' Conference
Online, 12 September 2005
Opening keynote speaker

1 hour online live webinar presentation – 95 participants worldwide

AITD (Australian Institute of Training & Development) e-Learning Symposium
Sydney, NSW, 5 October 2005
Keynote invited speaker
Paper published in the October edition of AITD Journal

Knowledge Tree Journal
Online webinar, 3 November 2005
Invited member of panel – 5 international speakers
1 hour online live event

Learning Technologies 2005
Mooloolaba, QLD**,** 9 – 11 November 2005
Featured speaker

ASCILLITE
Brisbane, QLD**,** 5 – 10 December 2005
Co-authored paper

Phenomenography Symposium
Sydney, NSW, University of Sydney, 6 – 7 December 2005
Presentation

2006
Aged Care Services Board of Directors Conference
Sydney, NSW, 2 June 2005
Presentation encompassing future trends and developments in e-Learning

Centre for Learning Innovation – Department of Education
Sydney, NSW, 16 June 2006
Invited to conduct 2 hour workshop on innovations with Social Software in schools for a small group of leading teachers

DREAM – Danish Research Centre on Education and Advanced Media
'Constructions, Contexts, Consequences' Conference & PhD workshop
Odense, Denmark, 21 – 26 September 2006
Presented paper

ICL – Interactive Computer Aided Learning
Villach, Austria, 27 – 29 September 2006
Invited to contribute in a pre-conference workshop to present to an EU research project team.

BlogTalk ReLoaded
Vienna, Austria, 2 – 3 October 2006
Paper presented

Learning Technologies 2006
Mooloolaba, QLD, 8 – 10 November 2006

Invited speaker and conducted 2 workshops

AITD Conference Queensland / Northern Territory Conference
Online webinar, 30 November – 1 December 2006
Invited speaker – presented via interactive webinar session

2007
IQPC Instructional Design for Effective Learning
Sydney, NSW, 28 – 30 May 2007
Featured speaker presentation and half day workshop

Teaching and Learning Conference – Southbank Institute
Online webinar, 9 July 2007
Keynote, 1 hour webinar presentation

Learn X Conference
Sydney, NSW**,** 27 July 2007
Invited speaker as a featured case study

ELSSA workshops
Sydney, NSW**,** 27 July & 28 September 2007
Half day sessions introducing social software to ELSSA staff

Australian Businesswomen's Network
Online webinar, 28 August 2007
'Know How Now Series: Web2.0 technologies for business'**,** 1 hour webinar

Australian Sports Commission
Online webinar, 11 September 2007
'Designing learning with Web 2.0' 2 hour webinar

AITD workshop
Sydney, NSW, 20 September2007
'Web2.0 – Changing the learning landscape', 3 hour workshop

Department of Education NSW, Connected Learners conference
Online webinar, 3 October 2007
2 hour webinar panel presentation

Learning Technologies 2007
Mooloolaba, QLD, 14 – 16 November 2007
Invited speaker and conducted 2 workshops

2008
EdMedia
Vienna, Austria**,** 2 -5 July 2008
Paper presented

AICM
Sydney, NSW, 1 September 2008

Half day workshop on e-Portfolios for professional development

Australian Businesswomen's Network
Online webinar, 17 September 2008
'Know How Now Series: Web2.0 technologies for business', 1 hour webinar

AITD workshop
Sydney, NSW, 26 September 2008
'Personal Information Management with Social Software', 3 hour workshop

Learning Technologies 2008
Mooloolaba, QLD, 5 – 8 November 2008
Invited speaker and conducted 2 workshops

2009
HR Futures Conference
Melbourne, VIC, 26 February 2009
Featured presentation: 'Re-framing Professional Development'

AITD
Melbourne, VIC, 27 February 2009
'Innovative e-Learning Strategies' 1 day workshop

LearnX Conference
Sydney, NSW, 1 – 2 April 2009
'Social Learning', 1 hour workshop

AITD National Conference
Sydney, NSW, 21 – 22 April 2009
'Social Learning Networks', 1 hour workshop

AITD National Awards
Sydney, NSW, 21 April 2009
MC for the event

South Western TAFE Big Day Out
Sydney, NSW, 5 May 2009
'The Future of the Adult Educator', opening keynote address

Ark Group e-Learning Instructional Design conference
Canberra, ACT, 13 – 14 May 2009
'Re-framing learning design', invited presentation

St George Bank
Sydney, NSW, 27 August 2009
'Future of Learning', half day workshop

BlogTalk 2009
Seoul, South Korea, 1 – 2 September 2009
Organising committee

Text Pacific Publishing
Sydney, NSW, 25 September 2009
'Social media & publishing', half-day workshop

Learning Technologies 2009
Mooloolaba, QLD, 19 – 20 November 2009
Featured speaker

ConVerge Conference 2009
Melbourne, VIC, 3 – 4 December 2009
Keynote speaker

2010
Social Learning Collaborative Forum
Sydney, NSW, 19 January 2010
Invited facilitator, 1 day workshop

Ark Conference
Melbourne, VIC, 10 February 2010
'Designing Social Learning Networks', invited speaker

Social Business Summit Series
Austin, Texas; Sydney, NSW; London, United Kingdom
March/April 2010
Keynote speaker

Headshift Masterclass
Canberra, ACT, 22 March 2010
'Online communities for public sector engagements', 1 day workshop

Social Business Summit
Sydney, NSW, 25 March 2010
Conference convenor

AITD National Conference
Sydney, NSW, 21-22 April 2010
'The role of learning in a socially designed business', half day workshop

IBM: De-Mystifying Social Computing
Sydney, NSW, 9 June 2010
Breakfast seminar

Centre for Learning Innovation, Department of Education and Training NSW
Sydney, NSW, 16 June 2010
'The future of social media for learning', invited speaker for strategic workshop

2011
Social Business Summit
Sydney, NSW, 2 March 2011

Convenor and keynote speaker

IBM: Lotusphere
Singapore, 8 March 2011
'The Social Advantage', keynote speaker

IBM: Lotusphere
Kuala Lumpur, Malaysia, 10 March 2011
'The Social Advantage', keynote speaker

Social Learning Collaborative Forum
Canberra, ACT, 28 June 2011
1 day workshop

2011 TELLS – TAFE 'Aspire to Inspire' conference
Brisbane, QLD, 5 July 2011
Opening keynote speaker

2012
City West Water
Melbourne, VIC, 4 January 2012
'Use of social media for public utility workers', 1 day workshop

Dachis Group Global Conference
Las Vegas, USA, 14 January 2012
'Innovative learning initiatives', 5 x 1 hour workshops

ARK Group
Sydney, NSW, 23 January 2012
'Using SmartPhone app's', 1 day workshop

Virgin Australia – Executive Group
Brisbane, QLD, 10 February 2012
'Social Customer service', 2 hour presentation

Philippine Airlines Global Sales Conference
Manila, Philippines**,** 1 March 2012
'Social business by design', keynote speaker

Future of Management Education Forum
Sydney, NSW, 8 March 2012,
Half day workshop

Social Learning Landscape
Sydney, NSW, 29 March 2012
Panel presentation

AITD National Conference
Sydney, NSW, 18 April 2012
'Social media versus face-to-face training', keynote speaker

Legal Learning Leaders Forum
Sydney, NSW, 22 May & 19June 2012
'Future of Learning', 2 hour seminar

eLNet Symposium
Sydney, NSW, 25 May 2012
'Future of learning is mobile', invited speaker

NewsGator Usergroup
Sydney, NSW, 9 August 2012
'Social learning advantage', 1 hour workshop

NewsGator Usergroup
Singapore, 6 November 2012
'Social learning advantage', 1 hour workshop

Ripple Effect Group - Visual thinking for communicating
Online webinar, 21 November 2012
1 hour webinar

2013
Digital Disruption Research Group, Sydney University Business School
Sydney, NSW, 2013
Monthly seminars to engage with industry research group

National Judicial College of Australia
National – Australia, March 2013
Implemented social learning platform for Coroners program.

AHRI – Australian Human Resources Institute
Sydney, NSW, 26 March 2013
'Future of Learning', 2 hour workshop

Optus
Sydney, NSW, Feb – May 2013
Researched the learning context of network engineers – made organisational recommendations

AITD
Sydney, NSW, April & June 2013
Industry Journal – published 2 articles

Digital Disruption Research Group – Disrupt Sydney Conference
Sydney, NSW, 5 September 2013
'Future of learning: smarter, simpler and social', keynote speaker

Australian Stock Exchange
Sydney, NSW, 11 September 2013
'The social advantage', keynote speaker

Appendix 2: Subject Outline statement

The following statement was included in the Subject Outline documentation provided to all students, regardless of participation in the research study.

Research Project

This subject has been selected for inclusion in a research project that requires the analysis of the weblogs completed in this subject. Participation in the research is voluntary and you will be required to sign a Consent Form if you wish to be included.

Non-participation will **not** affect your progress or final grade in this subject.

The lecturer will provide full details of the project and the Consent Form.

UTS Human Research Ethics Committee clearance number is: UTS HREC 2005-005A.

Appendix 3: Consent Form

The following consent form was provided to all potential research participants at the commencement of their subject, together with the information letter (Appendix 4).

CONSENT FORM

I, _____ agree to participate in the research project:

'The creation of knowledge artefacts through the use of personalised collaborative learning networks.'
UTS HREC approval reference number: UTS HREC 2005-005A
being conducted by Anne Bartlett-Bragg of the University of Technology, Sydney for her PhD degree.

I understand that the purpose of this study is to investigate the development of knowledge through the use of weblogs, leading to the formation of personalised collaborative learning networks.

I understand that my participation in this research will involve completing the assessment tasks, as stated in the Subject Outline, and, after my result in the subject has been finalised, permitting the researcher to have access to my weblog assignments as part of the data to be analysed by the researcher. This involvement will not require additional time commitments beyond the normal workload of the subject.

I understand that I may be contacted by the researcher to participate in an interview of about one hour duration after the completion of the subject and the assessment tasks.

I am aware that I can contact Anne Bartlett-Bragg (, Anne.Bartlett-Bragg@uts.edu.au) or her supervisor, Dr Shirley Saunders (9514 3321; Shirley.Saunders@uts.edu.au), or the Course Co-ordinator, Dr Hermine Scheeres (9514 3894; Hermine.Scheeres@uts.edu.au), if I have any concerns about the research.

I also understand that I am free to withdraw my participation from this research project at any time I wish and without giving a reason. I understand that my withdrawal from the research will not in any way prejudice my academic progress in this or future subjects.

I agree that Anne Bartlett-Bragg has answered my questions fully and clearly.

I agree that the research data gathered from this project may be published in a form that does not identify me in any way.

_____   __ / __ / __
Signed:

_____   __ / __ / __
Witnessed by

NOTE: This study has been approved by the University of Technology, Sydney Human Research Ethics Committee. If you have any complaints or reservations about any aspect of your participation in this research which you cannot resolve with the researcher, you may contact the Ethics Committee through the Research Ethics Officer, Ms Louise Abrams (ph: +61 2 9514 9615, louise.abrams@uts.edu.au). Any complaint you make will be treated in confidence and investigated fully and you will be informed of the outcome.

Appendix 4: Information Letter

The following letter was provided to all potential research participants at the commencement of their subject.

INFORMATION LETTER

I am currently enrolled for a PhD in the Faculty of Education and would like to invite participants to be part of my study of eLearning.

In particular, I would like your permission to have access to your weblogs that you will have completed to be part of the research data for analysis for my PH D. If you agree I guarantee to provide confidentiality so that your work cannot be identified in the writing of the research findings.

I may also need to ask you if you would participate in a follow-up interview with me (of about an hour) after the subject is over.

You **do not** have to agree to participate in my study, and I would like to assure you that your decision will in no way affect your workload or assessment tasks. All participants must complete the same assessments based on the criteria stated in your notes, so there is no extra subject workload.

Your decision is completely voluntary and during the sessions I will not know who has agreed to participate or not.

If you agree to participate, a third party such as Jean Clendinning, will collect the signed Consent Forms and will only give them to me after your project is completed. This means that during our sessions, when I am your facilitator, I will not know who has agreed to participate in the research or not.

If you have any concerns about this process, please direct these to my PhD supervisor, Dr Shirley Saunders (Shirley.Saunders@uts.edu.au; Telephone: (02) 9514 3321).

Please read the following and if you agree that I have your permission to have access to your weblogs for my research project, please sign the Consent Form and give it to Jean Clendinning or nominated third party who will give it to me only after the project is finalised. If at any time you wish to withdraw your consent, please contact the third party.

Project Title:
'The creation of knowledge artefacts through the use of personalised collaborative learning networks.'

Purpose of the study:
The proposed research intends to investigate the development of knowledge through the use of weblogs, leading to the formation of personalised collaborative learning networks.

The research aims to test a model developed from practice and explore the learners' experience of identifying and joining a network of integrated communication that extends the learning beyond the physical boundaries and opinions of the classroom.

The development of knowledge through learning to self-publish and comment on postings that adhere to the protocols and norms of behaviour in the chosen communication network is expected to enhance the learners' reflective, meta-cognitive and written skills as well as management of their learning.

Methodology:
The weblogs will be analysed from an individual's personal experience and collectively for the groups' common experiences. Using qualitative analysis, categorisation of experiences will attempt to gather an understanding of both the process and the outcome of using weblogs to develop knowledge.

The process of analysing individual experience from the examination of weblogs does not have a relationship to the assessment criteria for this project.

If you give your permission, your weblogs will be accessed by the facilitator after completion of the final assessment task. The facilitator will analyse these weblogs using dimensions that are not currently assessed.

Research Participant Selection:
Research participants are to be selected on a voluntary basis from learners enrolled in the Diploma of eLearning modules. No payment is to be provided for participation. Signed Consent Forms from learners agreeing to participate will be collected and held by a third party until after the results are finalised for the project. The signed Consent Forms will then be given to the researcher.

Participants can withdraw their consent by contacting the third party at any time during the study without giving a reason and without any adverse consequences to their participation and assessment in this subject.

Confidentiality:
For the purposes of the research project, all weblog URLs accessed for the research will be coded with a numeric and text-based label, indicating fictitious names for purposes of readability in the final representation of the data.

For security of data collection, the final assessment task presented on the weblog will be copied onto Word documents and stored in a password protected folder on my laptop, with hard copies stored in a locked filing cabinet in my home office.

If you have any queries or concerns, please do not hesitate to contact me personally and I will make a time to discuss this with you on an individual basis.

Thank you for your time and consideration!

Key Contact Details:

Anne Bartlett-Bragg	Dr Shirley Saunders
Lecturer & PhD Candidate	PhD Supervisor
Anne.Bartlett-Bragg@uts.edu.au	Shirley.Saunders@uts.edu.au
Ph:	Ph: 02 9514 3321

Appendix 5: Participants' written response question

The following is a copy of guidelines distributed to all students (including research participants) for completion as part of their final assessment task at the end of their subject.

Written report (new page on the weblog) that analyses and appraises the learning experience for the subject – including the use of weblogs and collaborative learning networks and the evaluation of the technologies addressed in this subject

The final written entry will appear on the weblog on a separate page and will analyse and appraise the learning for the entire subject.

Including the following issues:

- Have you ever used weblogs before? Discuss previous experience.

- Explain the overall process of using a weblog. Did it enhance the development of learning? If so – explain how. If not – explain why not.

- Did the structure of your weblog – the use of categories for topics, links for resources and references etc. – assist your learning? Explain.

- Was a network formed? How did that happen – explain the process. How did they participate and engage with the network – describe the process.

- Describe and explain how the norms of behaviour and protocols for the network were identified.

- How did they learn from the dialogue of their network?

- Create a visual representation of their network.

- How does your research and study of learning technologies in this subject compare with the experience of using a weblog? Justify the issues raised.

In addition, the report will need to:

- State a clear argument.

- Be supported by evidence and references.

- Use appropriate grammar and spelling.

- Include a list of references – and hyperlinks.

List of References

Ackland, R. 2005, 'Mapping the US political blogosphere: Are conservative bloggers more prominent?', *BlogTalk Downunder conference*, Sydney, 20–21 May, viewed 25 May 2005, <http://incsub.org/blogtalk/?page_id=49>.

Adams, J. & Morgan, G. 2007, '"Second generation" e-learning: Characteristics and design principles for supporting management soft-skills development', *International Journal on eLearning*, vol. 6, no. 2, pp. 157–85.

Akerlind, G. S. 2005a, 'Learning about phenomenography: Interviewing, data analysis and the qualitative research paradigm' in J. A. Bowden & P. Green (eds) *Doing developmental phenomenography,* RMIT University Press, Melbourne, pp. 63-73.

Akerlind, G. S., 2005b, 'Phenomenographic methods: A case illustration', in J. A. Bowden & P. Green (eds) *Doing developmental phenomenography,* RMIT University Press, Melbourne, pp. 103-127.

Akerlind, G. S. 2005c, 'Variation and commonality in phenomenographic research methods', *Higher Education Research & Development*, vol. 24, no. 4, pp. 321–34.

Alexander, H. 2006, 'Podcast lectures a hit with conscientious university students', *Sydney Morning Herald*, 11 August, viewed 11 August 2006, <http://www.smh.com.au/news/technology/podcast-lectures-a-hit/2006/08/10/1154803028454.html#>.

American Society for Training and Development 2006, *ASTD's annual review of trends in workplace learning and performance*, viewed 20 July 2006, <http://www.astd.org/NR/rdonlyres/B5CF7620-FA40-4B3C-8E7C-FC1745A73B7A/0/ASTD_StateoftheIndustry_2005.pdf>.

American Society for Training and Development 2012, *2012 state of the industry report: Organizations continue to invest in workplace learning,* viewed 20 July 2012, <http://www.astd.org/Publications/Magazines/TD/TD-Archive/2012/11/ASTD-2012-State-of-the-Industry-Report>.

Anastasi, J. & Cochrane, S. 2006, 'Are they too old to learn? Exploring the barriers to using weblogs in demystifying the information literacy experience for mature age undergraduate students', *Networked learning 2006,* London, viewed 18 June 2006, <http://www.lancaster.ac.uk/fss/organisations/netlc/past/nlc2006/abstracts/pdfs/P04%20Anastasi.PDF>.

Andergassen, M., Behringer, R., Finlay, J., Gorra, A. & Moore, D. 2009, 'Weblogs in higher education – why do students (not) blog?', *Electronic Journal of e-Learning*, vol. 7, no. 3, pp. 203–15.

Anderson, T. 2008a, 'Teaching in an online learning context', in T. Anderson (ed.) *The theory and practice of online learning,* AU Press, Edmonton, pp. 343–66.

Anderson, T. 2008b, 'Towards a theory of online learning', in T. Anderson (ed.) *The theory and practice of online learning,* AU Press, Edmonton, pp. 45–74.

Anderson, T. & Dron, J. 2011, 'Three generations of distance education pedagogy', *The International Review of Research in Open and Distance Learning,* vol. 12, no. 3, pp. 80–97.

Anderson, T. & Kanuka, H. 2003, *E-research: Methods, strategies and issues,* Allyn and Bacon, London.

Anderson, T., Rourke, L., Archer, W. & Garrison, R. 2001, 'Assessing teaching presence in computer conferencing transcripts', *Journal of the Asynchronous Learning Network,* vol. 5, no. 2, pp. 1–17.

Aresta, M., Santos, C., Pedro, L. & Moreira, A. 2013, 'Higher education institutions and digital identity: New needs, new skills?', in S. Warburton & S. Hatzipanagos (eds) *Digital identity and social media*, Information Science Reference, Hershey, PA, pp. 176–91.

Arsenault, J. & Morse, I. 'The two-punch power of weblogs in education', *BeatBlog,* weblog, viewed 15 December 2004, <http://exonous.typepad.com/beatblog/2004/05/the_twopunch_po.html>.

Attwell, G. 2007, 'The personal learning environments – the future of elearning?',
 eLearning Papers, vol. 2, no. 5, viewed 10 February 2013,
 <http://www.openeducationeuropa.eu/en/article/Personal-Learning-
 Environments---the-future-of-eLearning%3F>.

Attwell, G. 2010, 'Personal learning environments and Vygotsky', *Pontydysgu – bridge
 to learning,* weblog, viewed 19 October 2012,
 <http://www.pontydysgu.org/2010/04/personal-learning-environments-and-
 vygotsky>.

Australian Flexible Learning Framework, 2004, *Teaching and learning with blogs,*
 viewed 20 September 2004, <
 http://flexiblelearning.net.au/resources/weblogs/bloggingarticle0904.pdf>.

Australian Flexible Learning Framework 2006, *2006 e-learning benchmarking project*,
 viewed 20 July 2013,
 <http://flexiblelearning.net.au/wpcontent/uploads/benchmarking_report2006.pdf
 >.

Australian Flexible Learning Framework 2009, *2009 e-learning benchmarking report*,
 viewed 20 July 2013, <http://flexiblelearning.net.au/wp-
 content/uploads/2009BenchmarkingSurveyReport.pdf>.

Australian Flexible Learning Framework 2011, *2011 e-learning benchmarking survey,*
 viewed 20 July 2013, <http://flexiblelearning.net.au/wp-
 content/uploads/2011_e-learning_benchmarking_survey_final_report.pdf>.

Bagley, C. A. & Creswell, W. H. 2013, 'The role of social media as a tool for learning',
 in E. McKay (ed.) *ePedagogy in online learning: New developments in web
 mediated human computer interaction,* Information Science Reference, Hershey,
 PA, pp. 18–38.

Baker, S. & Green, H. 2005, 'Blogs will change your business', *BusinessWeek* (Asian
 edition), 2 May, pp. 45–53.

Baker, S. & Green, H. 2008, 'Social media will change your business', *BusinessWeek,* 20 February, viewed 10 October 2013, <http://www.businessweek.com/stories/2008-02-20/social-media-will-change-your-businessbusinessweek-business-news-stock-market-and-financial-advice>.

Bandura, A. 1977a, 'Self-efficacy: Toward a unifying theory of behavioral change', *Psychological Review,* vol. 84, no. 2, pp. 191–215.

Bandura, A. 1977b, *Social learning theory,* Prentice Hall, Englewood Cliffs, NJ.

Bandura, A. 1986, *Social foundations of thought and action: A social cognitive theory*, Prentice Hall, Englewood Cliffs, NJ.

Bandura, A. 1997, *Self-efficacy: The exercise of control*, Freeman, New York, NY.

Bandura, A. & Jourden, F. J. 1991, 'Self-regulatory mechanisms governing the impact of social comparison on complex decision making', *Journal of Personality and Social Psychology,* vol. 60, no. 6, pp. 941–51.

Bannon, D. 2012, 'State of the media: Social media report 2012', *Nielsen & NM Incite*, viewed 10 October 2013, <http://www.nielsen.com/us/en/reports/2012/state-of-the-media-the-social-media-report-2012.html>.

Barabasi, A-L 2003, *Linked: How everything is connected to everything else and what it means for business, science, and everyday life',* Plume, Cambridge, MA.

Baran, P. 1964, 'On distributed communications networks', *IEEE Transactions of the Professional Technical Group on Communications Systems,* vol. CS-12, no. 1, pp. 1–9.

Bartlett, A. 2005, 'Blogs and politics in Australia and globally', *BlogTalk Downunder conference*, Sydney, 20–21 May, viewed 25 May 2005, <http://incsub.org/blogtalk/?page_id=39>.

Bartlett-Bragg, A. 2003a, 'Blogging to learn', *Knowledge Tree*, no. 4, December, <http://www.flexiblelearning.net.au/knowledgetree/edition04/html/blogging_to_learn_intro.html>.

Bartlett-Bragg, A. 2003b, 'Blogs – enhancing reflection in e-learning', paper presented to the *e-Learning: A virtual promise? 4th international conference on human-system learning*, Glasgow, 2–4 July 2003.

Bartlett-Bragg, A. 2003c, 'Preparing for the future', paper presented to the *e-Learning: A virtual promise? 4th international conference on human-system learning*, Glasgow, 2–4 July 2003.

Bartlett-Bragg, A. 2005, 'Preparing for the future', *International Journal of Design Sciences & Technology,* vol. 12, no. 2, pp.115–22.

Bartlett-Bragg, A. 2006, 'Reflections on pedagogy', paper presented to the *BlogTalk reLoaded conference*, Vienna, 2–4 July.

Bartlett-Bragg, A. 2007, 'Reflections on pedagogy: Understanding adult learners' experiences of weblogs', in T. Burg & J. Schmidt (eds) *BlogTalks reLoaded*, Herstellung, Vienna, pp. 119–241.

Bartlett-Bragg, A. 2008a, 'e-Learning experiences', in J. Athansasou (ed.) *Adult education & training,* David Barlow Press, Terrigal, NSW, pp. 295–308.

Bartlett-Bragg, A. 2008b, 'Pedagogical practice for learning with social software', in T. Hansson (ed.) *Handbook of research on digital information technologies: Innovations, methods, and ethical issue*s, Information Science Reference, Hershey, PA, pp. 160–76.

Bartlett-Bragg, A. 2008c, 'Reframing assessment', in J. Luca & E. Weippl (eds) *Proceedings of world conference on educational multimedia, hypermedia and telecommunications 2008,* AACE, Chesapeake, VA, pp. 4020–4.

Bartlett-Bragg, A. 2009, 'Reframing practice: Creating social learning networks', *International Journal of Development and Learning in Organisations,* vol. 23, no. 4, pp. 16–20.

Bartlett-Bragg, A. 2012, 'Social media is not a fad, it's the future of learning', *Training and Development,* June, pp. 36–8.

Baumgartner, P. 2004, 'The zen art of teaching – communication and interactions in e-education", *Interactive collaborative learning conference 2004*, Kassel University, Villach, 29–30 September, viewed 4 November 2004, <http://www.elearningeuropa.info/extras/pdf/zenartofteaching.pdf>.

Bennett, S., Maton, K. & Kervin, L. 2008, 'The 'digital natives' debate: A critical review of the evidence', *British Journal of Educational Technology,* vol. 39, no. 5, pp. 775 – 786.

Bergner, I. 2004, 'Weblogs – virtual discussion in educational settings', *Interactive collaborative learning conference 2004*, Kassel University, Villach, 29–30 September, viewed 7 October 2004, <http://www.ro.feri.uni-mb.si/razno/icl2004/pdf/bergner.pdf>.

Beuschel, W. 2009, 'Weblogs in higher education', in S. Hatzipanagos & S. Warburton (eds) *Handbook of research on social software and developing community ontologies,* Information Science Reference, Hershey, PA, pp. 40–51.

Bingham, T. & Conner, M. 2010, *The new social learning: A guide to transforming organizations through social media,* Berrett-Koehler Publishers, San Francisco, CA.

Bliuc, A.-M., Goodyear, P. & Ellis, R. A. 2007, 'Research focus and methodological choices in studies into students' experiences of blended learning in higher education', *Internet and Higher Education,* vol.10, pp. 231–44.

BlogTalk 2003, *BlogTalk: A European conference on weblogs*, viewed 10 October 2013, <http://2003.blogtalk.net>.

BlogTalk 2.0 2004, *BlogTalk,* viewed 10 October 2013, <http://2004.blogtalk.net>.

BlogTalk Downunder 2005, *BlogTalk downunder*, viewed 10 October 2013, <http://incsub.org/blogtalk>

BlogTalk reLoaded 2006, *BlogTalk reloaded*, viewed 10 October 2013, <http://2006.blogtalk.net>.

Blood, R. 2000, 'Weblogs: A history and perspective', *Rebecca's pocket*, weblog, viewed 21 February 2010, <http://www.rebeccablood.net/essays/weblog_history.html>.

Blood, R. 2002, *The weblog handbook*, Perseus Publishing, Cambridge, MA.

Boettcher, J. V. 2003, 'Design levels for distance and online learning', in R. Discenza, C. Howard & K. Schenk (eds) *Distance learning and university effectiveness: Changing educational paradigms for online learning,* Information Science Publishing, Hershey, PA, pp. 21–54.

Boettcher, J. V. 2007, 'Ten core principles for designing effective learning environments: Insights from brain research and pedagogical theory', *Innovate,* vol. 3, no.3, viewed 5 February 2007, <http://www.innovateonline.info/index.php?view=article&id=54>.

Bonk, C. 2007, 'USA Today leads to tomorrow: Teachers as online concierges and can Facebook pioneer save face?', *TravelinEdMan,* weblog, viewed 27 March 2009, <http://travelinedman.blogspot.com.au/2007/10/usa-today-leads-to-tomorrow-teachers-as.html>.

Booth, S. 2008, 'Researching learning in networked learning: Phenomenography and variation theory as empirical and theoretical approaches', *Networked learning conference 2008,* Halkidki, Greece, 5 – 6 May, viewed 10 August 2011, < http://www.networkedlearningconference.org.uk/past/nlc2008/abstracts/PDFs/Booth_450-455.pdf>.

Boud, D. 2000, 'Sustainable assessment: Rethinking assessment for the learning society', *Studies in Continuing Education,* vol. 22, no. 2, pp. 151–67.

Boud, D. 2001, 'Using journal writing to enhance reflective practice', *New Directions for Adult and Continuing Education – Special Issue: Promoting journal writing in adult education*, vol. 2001, no. 90, pp. 9–18.

Boud, D. 2007, 'Reframing assessment as if learning were important', in D. Boud & N. Falchikov (eds) *Rethinking assessment in higher education,* Routledge, London, pp.14–25.

Boud, D. & Falchikov, N. 2007, 'Assessment for the longer term', in D. Boud & N. Falchikov (eds) *Rethinking assessment in higher education*, Routledge, London, pp. 4–13.

Boud, D., Keogh, R. & Walker, D. 1985, 'Promoting reflection in learning: A model' in D. Boud, R. Keogh & D. Walker (eds) *Reflection: Turning experience into learning,* Kogan Page, London, pp. 18–40.

Bowden, J. 2000, 'The nature of phenomenographic research' in J. A. Bowden & E. Walsh (eds) *Phenomenography,* RMIT University Press, Melbourne, pp. 1–18.

Bowden, J. 2005, 'Records of iterative processes in reaching version 8 of the 'success' categories of description', in J. Bowden & P. Green, (eds) *Doing developmental phenomenography*, RMIT University Press, Melbourne, pp. 156–70.

boyd, d. 2008, 'Taken out of context: American teen sociality in networked publics', PhD Dissertation, University of California-Berkeley, School of Information, viewed 6 February 2012, <http://www.danah.org/papers/TakenOutOfContext.pdf >.

boyd, d. 2010, 'Streams of content, limited attention: the flow of information through social media', *Educause Review,* September/October, pp. 27-36.

boyd, d. m. & Ellison, N. B. 2007, 'Social network sites: Definition, history, and scholarship', *Journal of Computer-Mediated Communication,* vol. 13, no. 1, viewed 30 July 2007, <http://jcmc.indiana.edu/vol13/issue1/boyd.ellison.html>.

Bozarth, J. 2010, *Social media for trainers: Techniques for enhancing and extending learning,* Pfeiffer, San Francisco, CA.

Brookfield, S. 1987, *Developing critical thinkers: Challenging adults to explore alternative ways of thinking and acting*, Jossey-Bass, San Francisco, CA.

Brookfield, S. 2008, 'Teaching critical thinking', in J. Athansasou (ed.) *Adult education & training*, David Barlow Press, Terrigal, NSW, pp. 51–68.

Brown, A. 1987, 'Knowing when, where and how to remember: A problem of metacognition', in R. Glaser (ed.) *Advances in instructional psychology,* Erlbaum Associates, Hillsdale, NJ.

Brown, J. S. 2005, 'New learning environments for the 21st century', viewed 13 February 2012, <http://www.cais.ca/uploaded/Temp/21st_century_school/newlearning.pdf>.

Brown, J. S. 2006, 'Learning in the digital age', *Ohio digital commons for education (ODCE) conference,* Columbus, OH, viewed 18 June 2013, <http://www.oln.org/conferences/ODCE2006/papers/jsb-2006ODCE.pdf> (no longer available online).

Brown, J. S. & Adler, R. P. 2008, 'Minds on fire', *Educause Review*, Jan/Feb, pp. 17–32.

Brown, M. 2009, 'Learning and technology – "In that order"', *Educause Review*, July/August, pp. 62–3.

Brown, S. 2013, 'Back to the future with MOOCs?', paper presented to the *International conference on information communication technologies in education 2013*, Crete, 4–6 July.

Bruns, A. & Jacobs, J. (eds) 2006, *Uses of blogs*, Peter Lang Publishing, New York, NY.

Bryant, L. 2003, 'Smarter, simpler, social: An introduction to online social software methodology', *Headshift*, viewed 3 July 2004, <http://www.headshift.com/moments/archive/sss2.html> (no longer available online).

Buchanan, M. 2002, *Nexus: Small worlds and the groundbreaking science of networks,* W. W. Norton, New York, NY.

Candy, P., Harri-Augstein, S. & Thomas, L. 1985, 'Reflection and the self-organized learner: A model of learning conversations', in D. Boud, R. Keogh & D. Walker (eds) *Reflection: Turning experience into learning,* Kogan Page, London, pp. 100–16.

Carliner, S. 2002, *Designing elearning,* ASTD Press, Alexandria, VA.

Castells, M. 2009, *The rise of the networked society,* 2nd edn, Wiley-Blackwell, Chichester.

Castells, M. 2010, 'Lecture on higher education', transcript of a lecture, University of the Western Cape, 7 August, viewed 20 June 2013, <http://chet.org.za/files/uploads/events/Seminars/Higher%20Education%20and%20Economic%20Development.pdf>.

Cavanagh, K. 2005, 'Comments in the margins: Life narrative, publishing, credibility, and blogs', *BlogTalk Downunder conference*, Sydney, 20–21 May, viewed 25 May 2005, <http://incsub.org/blogtalk/?page_id=112>.

Chaczko, Z. 2005, 'Blogging as an effective tool in teaching and learning software systems development', *BlogTalk Downunder conference*, Sydney, 20–21 May, viewed 25 May 2005, <http://incsub.org/blogtalk/?page_id=45>.

Chaiklin, S. 2003, 'The Zone of Proximal Development' in A. Kozulin, B. Gindis, V. S. Ageyev & S. M. Miller (eds) *Vygotsky's Analysis of Learning and Instruction*, Cambridge University Press, New York, NY, pp. 39-64.

Chesher, C. 2005, 'Blogs and the crisis of authorship', *BlogTalk Downunder* conference, Sydney, 20–21 May, viewed 25 May 2005, <http://incsub.org/blogtalk/?page_id=40>.

Chief Learning Officer, 2007, 'Europe's e-learning industry group revamped, renamed', viewed 17 September 2007, <http://www.clomedia.com/content/templates/ clo_article.asp?articleid=1814&zoneid=196>.

Chong, E. K. M. 2008, 'Harnessing distributed musical expertise through edublogging', *Australasian Journal of Educational Technology,* vol. 24, no. 2, pp. 181–94.

Chromatic, Aker, B. & Krieger, D. 2002, *Running weblogs with Slash,* O'Reilly Associates, Sebastopol, CA.

Clark, R. C. & Mayer, R. E. 2003, *e-Learning and the science of instruction*, Pfeiffer, San Francisco, CA.

Code, J. 2013, 'Agency and identity in social media', in S. Warburton & S. Hatzipanagos (eds) *Digital identity and social media,* Information Science Reference, Hershey, PA, pp. 37–57.

Coldwell-Neilson, J. 2013, 'Managing expectations: A changing landscape', in E. McKay (ed.) *ePedagogy in online learning: New developments in web mediated human computer interaction,* Information Science Reference, Hershey, PA, pp. 1–17.

Conole, G. 2013, *Designing for learning in an open world,* Springer, London.

Conole, G. & Dyke, M. 2003, 'Educational research using online methods', in Research, Scholarship and Teaching – changing relationships', paper presented to the *Annual conference of the Society for Research in Higher Education*, Royal Holloway College, London, 16 December.

Conole, G., Oliver, M., Isroff, K. & Ravenscroft, A. 2004, 'Addressing methodological issues in e-learning research', *Networked learning conference 2004*, London, 5–7 April, viewed 10 August 2011, <http://www.networkedlearningconference.org.uk/ past/nlc2004/proceedings/Symposia/Symposium4/Conole_et_al.htm>.

Cook, T. 2005, 'Up against reality: Blogging and the cost of content', *BlogTalk Downunder conference*, Sydney, 20–21 May, viewed 25 May 2005, <http://incsub.org/blogtalk/ ?page_id=42>.

Cooper, C. 2007, *Work-based learner ICT and e-learning survey*, Association of Learning Providers and the Learning and Skills Council, Mackinnon Partnership, Perivale, UK.

Cooper, C. & Boddington, L. 2005, 'Assessment by blog: Ethical case studies assessment for an undergraduate business management class', *BlogTalk Downunder conference*, Sydney, 20–21 May, viewed 25 May 2005, <http://incsub.org/blogtalk/?page_id=62 >.

Cornford, I. 1999, 'Social learning', in J. Athansasou (ed.) *Adult educational psychology,* Social Science Press, Katoomba, NSW, pp. 73–96.

Creswell, J. W. 2007, *Qualitative inquiry and research design: Choosing among five approaches,* Sage Publications, Thousand Oaks, CA.

Crowley, J. 2013, 'cMOOCs: Putting collaboration first', *Campus Technology,* viewed 20 August 2013, <http://campustechnology.com/Articles/2013/08/15/cMOOCs-Putting-Collaboration-First.aspx>.

Cuzzocrea, A. & Bellas, F. 2004, 'Distributed knowledge networks: Towards a new paradigm for delivering knowledge', in *Proceedings ITCC 2004: Information Technology: Coding and Computing 2004*, IEEE, vol. 1, pp. 118–23.

Czerkawski, B. & Hernández, J. N. 2013, 'Formal, non-formal, and informal e-learning experiences with emerging technologies: A case study of a graduate educational technology program', in H. Yang & S. Wang (eds) *Cases on formal and informal e-learning environments: Opportunities and practices,* Information Science Reference, Hershey, PA, pp. 337–55.

Dahlstrom, E. 2012, *ECAR study of undergraduate students and information technology,* research report, EDUCAUSE Center for Applied Research, Louisville, CO.

Dede, C. 2004, 'Enabling distributed learning communities via emerging technologies', *The Journal,* September, viewed 7 October 2004, <http://thejournal.com/Articles/2004/09/01/Enabling-Distributed-Learning-Communities-Via-Emerging-Technologies--Part-One.aspx>.

de Moor, A. & Efimova, L. 2004, 'An argumentation analysis of weblog conversations', *9th international working conference on the language-action perspective on communication modelling,* Rutgers University, New Brunswick, NJ, viewed 15 July 2004, <http://comminfo.rutgers.edu/~aakhus/lap/Moor_Efimova.pdf>.

Denzin, N. K. 1970, *The research act: A theoretical introduction to sociological methods,,* Aldine Transaction, Chicago, IL.

Dickey, M. D. 2004, 'The impact of web-logs (blogs) on student perceptions of isolation and alienation in a web-based distance-learning environment', *Open Learning*, vol. 19, no. 3, pp. 279–91.

Dickinson, G. 2003, 'Weblogs: can they accelerate expertise?' MA Dissertation, Anglia Ruskin University, Faculty of Education, viewed 2 February 2006, <http://www.participo.com/files/ma/do_weblogs_accelerate_expertise.pdf>.

Dodge, B. 1997, 'Some thoughts about WebQuests', *WebQuest.org*, viewed 20 September 2013, <http://webquest.sdsu.edu/about_webquests.html>.

Downes, S. 2004, 'Educational blogging', *Educause Review*, September/October, vol. 39, no. 5, pp. 14–26.

Downes, S. 2005, 'E-learning 2.0', *eLearn Magazine*, October, viewed 4 November 2005, <http://www.elearnmag.org/subpage.cfm?section=articles&article=20-1>.

Downes, S. 2007a, 'Introduction to connective knowledge', in T. Hug (ed.) *Media, knowledge & education: Exploring new spaces, relations and dynamics in digital media ecologies,* Innsbruck University Press, Innsbruck, pp. 77–102.

Downes, S. 2007b, 'Learning networks in practice', *Emerging Technologies for Learning,* vol. 2, pp. 19–27.

Downes, S. 2010a, 'Learning networks and connective knowledge', in H. H. Yang & S. C.-Y. Yuen (eds) *Collective intelligence and e-learning 2.0: Implications of web-based communities and networking,* Information Science Reference, Hershey, PA, pp. 1–26.

Downes, S. 2010b, 'New technology supporting informal learning', *Journal of Emerging Technologies in Web Intelligences,* vol. 2, no. 1, pp. 27–33.

Driscoll, M. P. 2005, *Psychology of learning for instruction,* 3rd edn, Pearson, Boston, MA.

Dron, J. & Anderson, T. 2009, 'How the crowd can teach', in S. Hatzipanagos & S. Warburton (eds) *Handbook of research on social software and developing community ontologies,* Information Science Reference, Hershey, PA, pp. 1–17.

Du, H. S. & Wagner, C. 2007, 'Learning with weblogs: Enhancing cognitive and social knowledge construction', *IEEE Transactions of Professional Communication,* vol. 50, no.1, pp. 1–16.

Dua, A. 2013, 'College for all', *McKinsey Insights*, viewed 10 June, 2013, <http://www.mckinsey.com/insights/social_sector/college_for_all>.

Edublogs 2013, *Edublogs,* viewed 10 October 2013, <http://edublogs.org>.

Educause 2005, *7 Things you should know about ... blogs,* viewed 15 September 2005, < http://www.educause.edu/library/resources/7-things-you-should-know-about-blogs>.

Efimova, L. 2004, 'Discovering the iceberg of knowledge work: A weblog case', *Fifth European Conference on Organisational Knowledge, Learning and Capabilities (OKLC 2004)*, April 2-3, 2004, viewed 4 July 2004, <https://doc.telin.nl/dscgi/ds.py/Get/File-34786>.

Efimova, L. & Fiedler, S. 2004, 'Learning webs: Learning in weblog networks', in P. Kommers, P. Isaias & M. B. Nunes (eds) *IADIS international conference web based communities*, IADIS Press, Lisbon, pp. 490–4.

Efimova, L. & de Moor, A. 2005, 'Beyond personal webpublishing: An exploratory study of conversational blogging practices', *38th Hawaii international conference on system sciences (HICSS-38)*, Hawaii, 3–6 January.

Ellison, N., Steinfield, C. & Lampe, C. 2007, 'The benefits of Facebook "friends": Exploring the relationship between college students' use of online social networks and social capital', *Journal of Computer-Mediated Communication,* vol. 12, no. 3, viewed 30 July 2007, <http://jcmc.indiana.edu/vol12/issue4/ellison.html>.

Ewell, P. 2004, 'Assessment that matters: Creating authentic academic cultures of evidence', viewed 24 June 2006, <http://www.usna.edu/CTL/DeptPosters/PostersPPT/Ewell.pps> (no longer available online).

Farmer, J. 2005, 'Centred communication: Weblogs, aggregation and wikis in the organisation', *BlogTalk Downunder conference*, Sydney, 20–21 May, <http://incsub.org/blogtalk/?page_id=54>.

Farmer, J., & Bartlett-Bragg, A. 2005, 'Blogs @ anywhere: High fidelity online communication', *Balance, fidelity, mobility: Maintaining the momentum, ASCILITE conference,* Brisbane, 4–7 December, pp. 197–203. <http://www.ascilite.org.au/conferences/brisbane05/blogs/proceedings/22_Farmer.pdf>.

Farmer, B., Yue, A. & Brooks, C. 2008, 'Using blogging for higher order learning in large cohort university teaching: A case study', *Australasian Journal of Educational Technology,* vol. 24, no. 2, pp. 123–36.

Ferdig, R. E. & Trammell, K. D. 2004, 'Content delivery in the 'blogosphere'', *The Journal*, February, viewed 6 February 2006, <http://www.thejournal.com/articles/16626>.

Ferrara, K., Brunner, H. & Whittemore, G. 1991, 'Interactive written discourse as an emergent register', *Written Communication*, vol. 8, no. 1, pp. 8 - 34.

Festinger, L. 1954, 'A theory of social comparison processes', *Human Relations,* vol. 7, pp. 117–40

Fiedler, S. 2004, 'Introducing disruptive technologies for learning: Personal web publishing and weblogs', in L. Cantoni & C. McLoughlin (eds) *Ed-media*, Association for Advancement of Computing in Education (AACE), Lugano, Switzerland, pp. 2584–2591.

Fiedler, S. 2005, 'Accounts of personal learning and change', *BlogTalk Downunder conference,* Sydney, 20–21 May.

Fiedler, S. 2006, 'Landscapes of tools and services reconsidered: New directions for informal learning support in higher education?', *DREAM conference*, Odense, Denmark, 21–23 September.

Fiedler, S. & Pata, K. 2009, 'Distributed learning environments and social software: In search for a framework of design', in S. Hatzipanagos & S. Warburton (eds) *Handbook of research on social software and developing community Ontologies,* Information Science Reference, Hershey, PA, pp. 145–58.

Flavell, J. H. 1976, 'Metacognitive aspects of problem solving', in L. B. Resnick (ed.) *The nature of intelligence,* Erlbaum, Hillsdale, NJ, pp. 231–6.

Flavell, J. H. 1987, 'Speculations about the nature and development of metacognition', in F. Weinert & R. Kluwe (eds) *Metacognition, motivation, and understanding,* Lawrence Erlbaum, Hillsdale, NJ, pp. 21–9.

Flick, U. 2009, *An introduction to qualitative research*, 4th edn, Sage Publications, London.

Francis, H. 1996, 'Advancing phenomenography: Questions of method', in G. Dall'Alba & B. Hasselgren (eds) *Reflections on phenomenography: Toward a methodology?,* vol. 109, Acta Universitatis Gothoburgensis, Gothenburg, page numbers unknown.

Freeman, W. J. 2000, *How brains make up their mind,* Columbia University Press, New York, NY.

Friesen, N. 2009, *Re-thinking e-learning research: Foundations, methods and practices,* Peter Lang, New York, NY.

Fuller, G. 2005, 'The eventual potential of blogs', *BlogTalk Downunder conference*, Sydney, 20–21 May, viewed 25 May 2005, <http://incsub.org/blogtalk/?page_id=52>.

Garrison, R., Anderson, T. & Archer, W. 2000, 'Critical inquiry in text-based environment: Computer conferencing in higher education', *The Internet and Higher Education,* vol. 2, no. 2–3, pp. 87–105.

Gibson, B. 2004, 'A learning blogosphere', *The Community Engine*, viewed 25 May 2005, <http://thecommunityengine.com/home/archives/2005/03/a_learning_blog.html>.

Glenn, D. 2003, 'Scholars who blog', *The Chronicle of Higher Education,* viewed 2 October 2003, <http://chronicle.com/free/v49/i39/39a01401.htm>.

Glogoff, S. 2005, 'Instructional blogging: Promoting interactivity, student-centred learning, and peer input', *Innovate*, vol. 1, no. 5, viewed 15 August 2006, <http://www.innovateonline.info/index.php?view=article&id=126>.

Godwin-Jones, R. 2003, 'Emerging technologies: Blogs and wikis – environments for online collaboration', *Language Learning & Technology,* vol. 7, no. 2, pp. 12–6.

Goggin, G. 2005, 'Have fun and change the world: Mobile phone culture and the internet', *BlogTalk Downunder conference*, Sydney, 20–21 May, viewed 25 May 2005, <http://incsub.org/blogtalk/?page_id=119>.

Goodyear P., Banks, S., Hodgson, V. & McConnel,l D. 2004, 'Research on networked learning: An Overview', in P. Goodyear, S. Banks, V. Hodgson & D. McConnell (eds), *Advances in Research on Networked Learning*, vol. 8, Springer, London, pp. 1-9.

Goodyear, P., 2005, 'Educational design and networked learning: Patterns, pattern languages and design practice', *Australasian Journal of Educational Technology,* vol. 21, no.1, pp. 82–101.

Gosper, M., Malfroy, J. & McKenzie, J. 2013, 'Students' experiences and expectations of technologies: An Australian study designed to inform planning and development decisions', *Australasian Journal of Educational Technology,* vol. 29, no.2, pp. 268–282.

Granovetter, M. 1983, 'The strength of weak ties: A network theory revisited', *Sociological Theory,* vol. 1, pp. 201–33.

Guardia, L., Maina, M. & Sangra, A. 2013, 'MOOC design principles: A pedagogical approach from the learners' perspective', *eLearning Papers,* no. 33, viewed 20 June 2013, <http://www.openeducationeuropa.eu/en/article/MOOC-Design-Principles.-A-Pedagogical-Approach-from-the-Learner%E2%80%99s-Perspective?paper=124335>.

Gullett, E., & Bhandar, M. 2012, 'Evaluating student perceptions of using blogs in an online course', in L. Tomei (ed.) *Advancing education with information communication technologies: Facilitating new trends,* Information Science Reference, Hershey, PA, pp. 257–67.

Gumbrecht, M. 2004, 'Blogs as "protected space", *Workshop on the weblogging ecosystem: Aggregation, analysis, and dynamics: WWW 2004,* ACM, New York, viewed 15 September 2004, <http://www.blogpulse.com/papers/www2004gumbrecht.pdf>.

Gunawardena, C. N. 1995, 'Social presence theory and implications for interaction collaborative learning in computer conferences', *International Journal of Educational Telecommunications*, vol. 1, no. 2/3, pp. 147–66.

Gurteen, D. 2003, 'Weblogs as e-learning tools', *European conference on e-learning,* Brunel University, Uxbridge, UK, pp. 79–84.

Gustafson, J., Hodgson, V. & Tickner, S. 2004, 'Identity construction and dialogue genres – how notions of dialogue may influence social presence in networked learning environments', *Networked learning conference 2004*, London, 5–7 April, viewed 10 August 2011, <http://www.networkedlearningconference.org.uk/past/nlc2004/proceedings/Symposia/Symposium13/Gustafson_et_al.htm>.

Hall, B. 1997, *Web-based training*, John Wiley & Sons, New York, NY.

Harris, R. & Muirhead, A. 2004, 'Online learning community research: Some influences of theory on methods', *Networked learning conference 2004*, London, 5–7 April, viewed 10 August 2011, <http://www.networkedlearningconference.org.uk/past/nlc2004/proceedings/Symposia/Symposium7/Harris_Muirhead.htm>.

Hatzipanagos, S. 2013, 'Students as communities of non-practice: Making the case for the use of social media in higher education', in S. Warburton & S. Hatzipanagos (eds) *Digital identity and social media,* Information Science Reference, Hershey, PA, pp. 225–32.

Heidegger, M. 1968, '*What is called thinking*?', trans. J. G. Gray, Harper Row, New York, NY.

Herron, J. 1985, 'The role of reflection in a co-operative inquiry', in D. Boud, R. Keogh & D. Walker, (eds) *Reflection: Turning experience into learning,* Kogan Page, London, pp. 128–38.

Hiler, J. 2001, 'Borg journalism: We are the blogs. Journalism will be assimilated', *Microcontent News*, 1 April, viewed 20 September 2004, <http://www.microcontentnews.com/articles/borgjournalism.htm> (no longer available online).

Hill, P. 2012, 'Four barriers that MOOCs must overcome to build a sustainable model'*, eliterate*, weblog, viewed 30 July 2013, <http://mfeldstein.com/four-barriers-that-moocs-must-overcome-to-become-sustainable-model>.

Hoh, B. 2005, 'What's in the box? Modulating vocabularies of trauma and mundanity in refugee blogs', *BlogTalk Downunder conference*, Sydney, 20–21 May, viewed 25 May 2005, <http://incsub.org/blogtalk/?page_id=111>.

Hooley, T., Wellens, J. & Marriott, J. 2012, *What is online research?: Using the internet for social science research,* Bloomsbury Academic, London.

Hortin, J. A. 1994, 'Theoretical foundations of visual learning' in D. Moore & F. Dwyer (eds) *Visual literacy: A spectrum of visual learning*, Educational Technology Publications, Englewood Cliffs NJ, pp. 5–30.

Horton, K. & Horton, W. 2003, *e-Learning tools and technologies,* John Wiley & Sons, New York, NY.

Hyerle, D. 1996, *Visual tools for constructing knowledge,* Association for Supervision and Curriculum Development, Alexandria, VA.

Johnson, L., Adams, S., & Cummins, M. 2012, *Technology outlook for Australian tertiary education 2012–2017: An NMC horizon report and regional analysis,* The New Media Consortium, Austin, TX.

Johnson, L. Adams Becker, S., Cummins, M., Freeman, A., Ifenthaler, D. & Vardaxis, N. 2013, *Technology outlook for Australian tertiary education 2013–2018: An NMC horizon project regional analysis,* The New Media Consortium, Austin, TX.

Johnson, L., Levine, A. & Smith, R. 2008, *The 2008 horizon report: Australia-New Zealand edition*, The New Media Consortium, Austin, TX.

Jones, C. 2004, 'Quantitative and qualitative research: Conflicting paradigms or perfect partners?', *Networked learning conference 2004*, London, 5–7 April, viewed 10 August 2011, <http://networkedlearningconference.org.uk/past/nlc2004/ proceedings/symposia/symposium4/jones.htm>.

Kearney, M., Shuck, S., Burden, K. & Aubusson, P. 2012, 'Viewing mobile learning from a pedagogical perspective', *Research in Learning Technology,* vol. 20, no pp. available.

Keengwe, J., Kidd, T., & Kyei-Blankson, L. 2009, 'Faculty and technology: Implications for faculty training and technology leadership', *Journal of Science Education and Technology,* vol. 18, pp. 23–8.

Kennedy, G., Judd, T., Churchward, A., Gray, K., & Krause, K. 2008, 'First year students' experiences with technology: Are they really digital natives?' *Australasian Journal of Educational Technology,* vol. 24, no. 1, pp. 108–122.

Kerawalla, L. J., Minocha, S., Kirkup, G. & Conole, G. 2008, 'Characterising the different blogging behaviours of students on an online distance learning course', *Learning Media and Technology,* vol. 33, no. 1, pp. 21–33.

Kerawalla, L. J., Minocha, S., Kirkup, G. & Conole, G. 2009a, 'A framework for blogging in higher education', *Journal of Computer Assisted Learning,* vol. 25, no. 1, pp. 31–42.

Kerawalla, L., Minocha, S., Kirkup, G. & Conole, G. 2009b, 'Supporting student blogging in higher education', in S. Hatzipanagos & S. Warburton (eds) *Handbook of research on social software and developing community ontologies*, Information Science Reference, Hershey, PA, pp. 222–37.

Kervin, L., Mantei, J. & Herrington, A. 2009, 'Blogs as a social networking tool to build community', in S. Hatzipanagos & S. Warburton (eds) *Handbook of research on social software and developing community ontologies*, Information Science Reference, Hershey, PA, pp. 238–53.

Kirkpatrick, D. & Roth, D. 2005, 'Why there's no escaping the blog', *Fortune,* 24 January, pp. 32–7.

Knights, S. 1985, 'Reflection and learning: The importance of a listener', in D. Boud, R. Keogh & D. Walker, (eds) *Reflection: Turning experience into learning,* Kogan Page, London, pp. 85–90.

Knowles, M. 1975, *Self-directed learning*, Association Press, New York, NY.

Koole, M. & Parchoma, G. 2013, 'The web of identity: A model of digital identity formation in networked learning environments', in S. Warburton & S. Hatzipanagos (eds) *Digital identity and social media*, Information Science Reference, Hershey, PA, pp. 14–28.

Koutropoulos, A. 2013, 'MOOCs in higher education: Options, affordances, pitfalls', *Learning Solutions Magazine,* viewed 30 July 2013, <http://www.learningsolutionsmag.com/articles/1205/>.

Krause, S. D. 2004, 'When blogging goes bad: A cautionary tale about blogs, email lists, discussion, and interaction', *Kairos*, vol. 9, no. 1, viewed 25 May 2005, <http://english.ttu.edu/kairos/9.1/binder.htm?praxis/krause/index.html>.

Kuhn, D. 2000, 'Metacognitive development', *Current Directions in Psychological Science*, vol. 9, pp. 178–81.

Kvale, S. 1996, *InterViews: An introduction to qualitative research interviewing,* Sage Publishing, Thousand Oaks, CA.

Larsson, A. O. & Hrastinski, S. 2011, 'Blogs and blogging: Current trends and future directions', *First Monday,* vol 16, no. 3, 7 March, viewed 19 April 2011, <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index/fm/rt/printerFriendly/3101/2836>.

Lave, J., & Wenger, E. 1991, *Situated learning: Legitimate peripheral participation*, Cambridge University Press, New York, NY.

Lee, C. D. & Smagorinsky, P. (eds) 2000, *Vygotskian perspectives on literacy research: Constructing meaning through collaborative inquiry,* Cambridge University Press, New York, NY.

Lee, M. & Baylor, A. L. 2006, 'Designing metacognitive maps for web-based learning', *Educational Technology & Society*, vol. 9, no.1, pp. 344–8.

Lenhart, A., Horrigan, J. & Fallows, D. 2004, *Content creation online,* Pew Internet & American Life Project, Washington, DC, viewed 10 March 2006, <http://www.pewinternet.org/2004/02/29/content-creation-online/>.

Liber, O. 2004, 'Cybernetics, e-learning and the education system', *International Journal of Learning Technology,* vol. 1, no. 1, pp. 127–40.

Loving, C., Schroeder, C., Kang, R., Shimek, C. & Herbert, B. 2007, 'Blogs: Enhancing links in a professional learning community of science and mathematics teachers', *Contemporary Issues in Technology and Teacher Education,* vol. 6, no. 4, viewed 18 October 2007, <http://www.citejournal.org/vol6/iss4/science/article1.cfm>.

MacColl, I., Morrison, A., Muhlberger, R., Simpson, M. & Viller, S. 2005, 'Reflections on reflection: Blogging in undergraduate design studios', *BlogTalk Downunder conference*, Sydney, 20–21 May, viewed 25 May 2005, <http://incsub.org/blogtalk/?page_id=69 >.

Macpherson, A., Homan, A. & Wilkinson, K. 2005, 'The implementation and use of e-learning in the corporate university', *Journal of Workplace Learning*, vol. 17, no. 1/2, pp. 33–48.

Margaryan, A., Littlejohn, A. & Vojt, G. 2011, 'Are digital natives a myth or reality? University students' use of digital technologies', *Computer & Education,* vol. 56, pp. 429 – 440.

Main, A. 1985, 'Reflection and the development of learning skills', in D. Boud, R. Keogh & D. Walker, (eds) *Reflection: Turning experience into learning,* Kogan Page, London, pp. 91–9.

Mann, C. & Stewart, F. 2000, *Internet communication and qualitative research: A handbook for researching online,* Sage Publications, London.

Manyika, J., Chui, M., Bughin, J., Dobbs, R., Bisson, P. & Marrs, A. 2013, 'Disruptive technologies: Advances that will transform life, business and the global economy', *McKinsey Global Institute*, viewed 10 June 2013, <http://www.mckinsey.com/insights/business_technology/disruptive_technologies>.

Markham, A. N. & Baym, N. K. (eds) 2009, *Internet inquiry: Conversations about method,* Sage Publications, Thousand Oaks, CA.

Martinez, M. & Jagannathan, S. 2010, 'Social networking, adult learning success and Moodle', *Adult learning in the digital age,* Information Science Reference, Hershey, PA, pp. 68–80.

Marton, F. & Booth, S. 1997, *Learning and awareness*, Lawrence Erlbaum Associates, Mahwah, NJ.

Oblinger, D.G. & Maruyama, M. K. 1996, *Distributed Learning*, CAUSE Professional Paper Series #14, CAUSE, Boulder, CO.

Mason, R. & Rennie, F. 2008, *E-learning and social networking handbook: Resources for higher education,* Routledge, New York, NY.

Maxwell, J. A. 2005, *Qualitative research design: An interactive approach,* 2nd edn, Sage Publications, Thousand Oaks, CA.

Mayer, R. 2001, *Multi-media learning*, Cambridge University Press, New York, NY.

Mayer, R. & Clark, R. 2002, *e-Learning and the science of instruction,* John Wiley & Sons, San Francisco, CA.

McLuhan, M. & Fiore, Q. 1967, *The medium is the massage: An inventory of effects,* Penguin Books, London.

McNeill, M., Diao, M. M. & Gosper, M. 2011, 'Student uses of technology in learning: two lenses', *Interactive Technology and Smart Education,* vol. 8, no.2, p. 517.

Media, Entertainment and Arts Alliance, 2005, *Journalists code of ethics*, viewed 20 September 2013, <http://www.alliance.org.au/code-of-ethics.html>.

Meeker, M. & Wu, L. 2013, '2013 internet trends', *Kleiner Perkins Caulfield Byer,* viewed 31 May 2013, <http://www.kpcb.com/file/kpcb-internet-trends-2013>.

Mejias, U. 2006, 'The blog as dissertation literature review?', *Ulises Mejias*, weblog, viewed 10 October 2013, <http://blog.ulisesmejias.com/2006/01/25/the-blog-as-dissertation-literature-review>.

Mercer, N. 1994, 'Neo-Vygotskian theory and classroom education', in B. Stierer & J. Maybin (eds) *Language, literacy and learning in educational practice,* Multilingual Matters, Clevedon, UK.

Merchant, G. 2006, 'Identity, social networks and online communication', *e-Learning,* vol. 3, no. 2, pp. 235–44.

Merriam, S. B. 2001, 'Andragogy and self-directed learning: Pillars of adult learning theory', *New Directions for Adult and Continuing Education,* vol. Spring, no. 89, pp. 3–14.

Merriam, S. B. & Caffarella, R. S. 1999, *Learning in adulthood* 2nd edn, Jossey-Bass, San Francisco, CA.

Merriam-Webster.com 2005, *Merriam-Webster*, viewed 21 February 2010, <http://www.m-w.com/info/05prevwords.htm>.

Merrill, M. D. 2002, 'First principles of instruction', *Educational Technology Research and Development*, vol. 50, no. 3, pp. 43–59.

Miles, A. 2005, 'Media rich versus rich media', *BlogTalk Downunder conference*, Sydney, 20–21 May, viewed 25 May 2005, <http://incsub.org/blogtalk/?page_id=76>.

Miura, A. & Yamashita, K. 2007, 'Psychological and social influences on blog writing: An online survey of blog authors in Japan', *Journal of Computer-Mediated Communication,* vol 12, no. 4, viewed 15 September 2007, <http//jcmc.indiana.edu/vol12/issue4/miura.html>.

Moore, A. H. 2007, 'The new economy, technology and learning outcomes assessment', *Educause Quarterly,* vol. 3, pp. 6–8.

Moravec, J. 2013, 'Knowmad society: The "new" work and education', *On the Horizon,* vol. 21, no. 2, pp. 79–83.

Mortensen, T. & Walker, J. 2002, 'Blogging thoughts: Personal publication as online research tool', in A. Morrison (ed.) *Researching ICTs in context*, InterMedia Report, Oslo, pp. 249–79.

Munday, J. 2013, 'Using blogs to journal, document, and create community', in H. Yang & S. Wang (eds) *Cases on online learning communities and beyond: Investigations and applications,* Information Science Reference, Hershey, PA, pp. 167–85.

Murthy, D. 2008, 'Digital ethnography: An examination of the use of new technologies for social research', *Sociology,* vol. 42, no. 5, pp. 837–55.

Nardi, B., Schiano, D. & Gumbrecht, M. 2004, 'Blogging as social activity, or, would you let 900 million people read your diary?', *CSCW '04,* ACM, New York, NY, pp. 222–31.

Newman, M. 2003, 'The structure and function of complex networks', *SIAM Review,* vol. 45, pp. 167–256.

New Media Consortium, *Horizon report: 2004 Higher ed edition*, Austin, TX, viewed 20 June 2013, < http://www.nmc.org/publications/horizon-report-2004-higher-ed-edition>.

New Media Consortium, *Horizon report: 2005 Higher ed edition*, Austin, TX, viewed 20 June 2013, < http://www.nmc.org/publications/horizon-report-2005-higher-ed-edition>

New Media Consortium, *Horizon report: 2006 Higher ed edition*, Austin, TX, viewed 20 June 2013, < http://www.nmc.org/publications/horizon-report-2006-higher-ed-edition>.

New Media Consortium, *Horizon report: 2007 Higher ed edition*, Austin, TX, viewed 20 June 2013, < http://www.nmc.org/publications/horizon-report-2007-higher-ed-edition>.

Nichani, M. 2004, 'How to use weblogs to create engaging learning experiences', *eLearning Post,* viewed 1 June 2006, <http://www.elearningpost.com/blog/how_to_use_weblogs_to_create_engaging_learning_experiences>.

Nilsson, S. 2003, 'The function of language to facilitate and maintain social networks in research weblogs', *D-Essay*, Umea Universitet, Engelska lingvistik, viewed 27 February 2004, <http://www.eng.umu.se/stephanie/web/LanguageBlogs.pdf>.

Oblinger, D. 2010, 'A commitment to learning: Attention, engagement, and the next generation', *Educause Review,* September/October, pp. 4–6.

Oblinger, D., 2013, Higher education in the connected age, *Educause Review,* March/April, pp. 4–6.

O'Donnell, M. 2005, 'Blogging as pedagogic practice: Artefact and ecology', *BlogTalk Downunder conference*, Sydney, 20–21 May, viewed 25 May 2005, <http://incsub.org/blogtalk/?page_id=66>.

Orgad, S. 2009, 'How can researchers make sense of the issues involved in collecting and interpreting online and offline data?' in A. N. Markham & N. K. Baym (eds), *Internet inquiry: Conversations about method,* Sage Publications, Thousand Oaks, CA, pp. 33–54.

O'Neil, M. 2005, 'The networking of social authority: Hierarchies of taste in offline 'zines' and online blogs', *BlogTalk Downunder conference*, Sydney, 20–22 May, viewed 25 May 2005, <http://incsub.org/blogtalk/?page_id=107>.

O'Neil, M. 2013, 'Explosion of wireless devices strains campus networks', *The Chronicle of Higher Education,* viewed 10 October 2013, < http://chronicle.com/article/Explosion-of-Wireless-Devices/142277/>.

Organisation for Economic Cooperation and Development Public Affairs Division. 2005, e-Learning in tertiary education policy brief, OECD Policy Briefs, Paris.

O'Reilly, T. 2003, 'Architecture of participation', weblog, *O'Reilly ONLamp.com*, viewed 10 February 2013, <http://oreilly.com/pub/wlg/3017>.

O'Reilly, T. 2005, 'What is web2.0: Design patterns and business models for the next generation software', weblog*, O'Reilly*, viewed 10 February 2013, <http://oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html>.

Orihuela, J. L. 2003, 'Blogging and the ecommunication paradigms: 10 principles of the new media scenario', *BlogTalk conference,* Danube-University Krems, Vienna, viewed 13 July 2013, <http://mccd.udc.es/orihuela/blogtalk/> (no longer available online).

O'Shea, T. 1999, *Birbeck Web Forum on Learning and Teaching,* in B.U.o. London (ed.), viewed 10 February 2004, <http://www.bbk.ac.uk/asd/view/view02.html>.

Owen, M., Grant, L., Sayers, S. & Facer, K. 2006, *Social software and learning,* Futurelab, Bristol, viewed 18 July 2006, <http://www.futurelab.org.uk/resources/publications_reports_articles/opening_education_reports/Opening_Education_Report199>.

Palloff, R. M. & Pratt, K. 1999, *Building learning communities in cyberspace*, Jossey-Bass, San Francisco, CA.

Paquet, S. 2003a, 'Personal knowledge publishing and its uses in research', *Knowledge Board*, viewed 29 May 2003, <http://radio-weblogs.com/0110772/stories/2002/10/03/personalKnowledgePublishingAndItsUsesInResearch.html>.

Paquet, S. 2003b, 'A socio-technological approach to sharing knowledge across disciplines', PhD thesis, University of Montreal, viewed 10 July 2005, <http://radio.weblogs.com/0110772/2003/05/17.html>.

Patton, M. Q. 2002, *Qualitative research & evaluation methods* 3rd edn, Sage Publications, Thousand Oaks, CA.

Pedersen, S. & Macafee, C. 2007, 'Gender differences in British blogging', *Journal of Computer-Mediated Communication,* vol. 12, no. 4, viewed 15 September 2007, <http//jcmc.indiana.edu/vol12/issue4/Pedersen.html>.

Perakakis, P. 2013, 'New forms of open peer review will allow academics to separate scholarly evaluation from academic journals', *Impact of social sciences,* The London School of Economics and Political Science, weblog, 20 August, viewed 10 October 2013, <http://blogs.lse.ac.uk/impactofsocialsciences/2013/08/20/libre-project-open-peer-review-perakakis/>.

Pettenati, M. C. & Cigognini, M. E. 2007, 'Social networking theories and tools to support connectivist learning activities', *International Journal of Web-Based Learning and Teaching Technologies,* vol. 2, no. 3, pp. 42–60.

Pettenati, M. C., Cigognini, M. E., Guerin, E. M. & Mangione, G. R. 2009, 'Personal knowledge management skills for lifelong-learners 2.0', in S. Hatzipanagos & S. Warburton (eds) *Handbook of research on social software and developing community ontologies,* Information Science Reference, Hershey, PA, pp. 298–315.

Plomp, T. 2013, 'Preparing education for the information society: The need for new knowledge and skills', *International Journal Social Media and Interactive Learning Environments,* vol. 1, no. 1, pp. 3–18.

Preece, J. & Maloney-Krichmar, D. 2005, 'Online communities: Design, theory, and practice', *Journal of Computer-Mediated Communication,* vol. 10, no. 4, viewed 15 March 2006, <http://jcmc.indiana.edu/vol10/issue4/preece.html>.

Prosser, M. & Trigwell, K. 1999, *Understanding learning and teaching: The experience of higher education,* Open University Press, London.

Pulichino, J. 2005, *The synchronous e-learning research report 2005*, The eLearning Guild, Santa Rosa, CA.

Pullich, L. 2005, 'Usage of weblogs in Festum – a distance education program for teachers', *ICL Conference,* Villach, Austria, viewed 7 November 2005, <http:bt-mac2.fernuni-hagen.de/peter/gems/lpWeblogsinfestum.pdf>.

Qian, H. & Scott, C. 2007, 'Anonymity and self-disclosure on weblogs', *Journal of Computer-Mediated Communication,* vol. 12, no. 4, viewed 15 September 2007, <http://jcmc.indiana.edu/vol12/issue4/qian.html>.

Quick, W. 2001, 'I propose a name'*,* weblog, *Daily Pundit*, viewed 20 October 2013, < http://web.archive.org/web/20071227073108/http://www.iw3p.com/DailyPundit /2001_12_30_dailypundit_archive.php#8315120 >.

Ramachandran, V. 2013, 'Doctor wearing Google glasses streams live surgery', *Mashable*, viewed 1 September 2013, <http://mashable.com/2013/08/30/google-glass-surgery-live-stream>.

Rannenberg, K., Royer, D., & Deuker, A. 2009, *The future of identity in the information society – challenges and opportunities,* Springer, Berlin.

Ravenscroft, A., Sagar, M., Baur, E. & Oriogun, P. 2009, 'Ambient pedagogies, meaningful learning and social software', in S. Hatzipanagos & S. Warburton (eds) *Handbook of research on social software and developing community ontologies,* Information Science Reference, Hershey, PA, pp. 415–33.

Ravet, S. 2007, 'Europortfolio's mission', *Europortfolio*, viewed 28 September 2007, <http://www.eife-l.org/about/europortfolio>.

Ravet, S. 2010, 'Europortfolio's mission', *Europortfolio*, viewed 10 June 2010, <http://www.eife-l.org/about/europortfolio>.

Reporters San Frontiers 2005, *Cyberdissidents – a handbook,* viewed 10 October 2013, <http://www.rsf.org/IMG/pdf/handbook_bloggers_cyberdissidents-GB.pdf>.

Reynard, R. 2005, 'Blogs in higher ed: Personal voice as part of learning', *SmartClassroom*, viewed 15 February 2005, <http://www.campustechnology.com/news_article.asp?id=10473&typeid=156>.

Reynard, R. 2008, 'Avoiding the 5 most common mistakes in using blogs with students', *Campus Technology,* viewed 7 November 2008, <http://www.campustechnology.com/articles/68089_4/>.

Rheingold, H. 1993, *The virtual community: Homesteading on the electronic frontier,* MIT Press, Reading, MA.

Rheingold, H. 2002, *Smart mobs: The next social revolution*, Perseus Books Group, Cambridge, MA.

Rheingold, H. 2010, 'Attention and other 21st century social media literacies', *Educause Review,* September/October, pp.14-24.

Rheingold, H. 2012, *Net smart: How to thrive online,* MIT Press, Cambridge, MA.

Rheingold, H. & Alexander, B. 2013, 'MOOCs, hype, and the precarious state of higher ed: Futurist Bryan Alexander', *DML Central,* weblog, viewed 14 June 2013, <http://dmlcentral.net/blog/howard-rheingold/moocs-hype-and-precarious-state-higher-ed-futurist-bryan-alexander>.

Richardson, W. 2005, 'Assessing blogwork', weblog, *weblogg-ed,* viewed 24 June 2005, <http://weblogg-ed.com/2005/assessing-blogwork/>.

Richardson, W. 2006, *Blogs, wikis, podcasts and other powerful web tools for classrooms*, Corwin Press, Thousand Oaks, CA.

Richter, A. & Riemer, K. 2013, 'Malleable end-user software', *Business & Information Systems Engineering,* vol. 3, pp. 195–7.

Rogers, E. 2003, *Diffusion of innovations*, 5th edn, Free Press, New York, NY.

Ruch, F. L. & Zimbardo, P. G., 1971, *Psychology and life,* Scott Foresman, Glenview, IL.

Rudd, T. 2006, 'Rethinking learning networks: Missed opportunities for personalizing education?', *DREAM conference*, Odense, Denmark, 21–23 September.

Sade, G. 2005, 'Weblogs as open constructive learning environments', *BlogTalk Downunder conference*, Sydney, 20–21 May, viewed 25 May 2005, <http://incsub.org/blogtalk/?page_id=56>.

Salmon, G. 1999, Computer mediated conferencing in large scale management education, *Open Learning,* vol. 14, no. 2, pp. 34–43.

Salmon, G. 2000, *e-Moderating: The key to teaching and learning online*, Kogan Page, London.

Sandberg, J. 1997, 'Are phenomenographic results reliable?' *Higher Education Research & Development,* vol. 16, pp. 203–12.

Sanders, R. 2006, 'The "imponderable boom": Reconsidering the role of technology in education', *Innovate*, vol. 2, no. 6, viewed 30 July 2006, <http://www.innovate online.info/indec.php?view=article&id=232 >.

Sangra, A., Vlachopoulos, D. & Cabrera, N. 2012, 'Building an inclusive definition of e-learning: An approach to the conceptual framework', *International Review of Research in Open and Distance Learning,* vol. 13, no. 2, pp. 145–59.

Santos, I., & LeBaron, J. 2006, 'Ethical constraints in the valid interpretation of transcribed communication in online study', *Internet and Higher Education,* vol. 9, pp. 191–9.

Scardamalia, M. & Bereiter, C. 2006, 'Knowledge building: Theory, pedagogy, and technology' in K. Sawyer (ed), *Cambridge Handbook of the Learning Sciences*, Cambridge University Press, New York, NY, pp. 97-118.

Schon, D. A. 1983, *The reflective practitioner: How professionals think in action,* Basic Books, New York, NY.

Schon, D. A. 1987, *Educating the reflective practitioner: Towards a new design for teaching and learning,* Jossey-Bass, San Francisco, CA.

Scott, D. A. 1996, 'Making judgements about research', in D. Scott & R. Usher (eds) *Understanding educational research,* Routledge, London, pp. 74–90.

Seward Barry, A. M. 1994, 'Perceptual aesthetics and visual language', in D. Moore & F. Dwyer (eds) *Visual literacy: A spectrum of visual learning*, Educational Technology Publications, Englewood Cliffs, NJ, pp. 113–32.

Sharples, M., McAndrew, P., Weller, M., Ferguson, R., FitzGerald, E., Hirst, T., Mor, Y., Gaved, M. & Whitelock, D. 2012, *Innovating pedagogy 2012: Open University innovation report 1,* Open University, Milton Keynes, viewed 20 March 2013, <http://www.open.ac.uk/blogs/Innovating>.

Shavelson, R. J. 2007, 'Assessing student learning responsibly: From history to an audacious proposal', *Change,* vol. 39, no. 1, pp. 26–33.

Shepard, L. A. 2000, 'The role of assessment in a learning culture', *Educational Researcher,* vol. 29, no. 7, pp. 4–14.

Shirky, C. 2003, 'A group is its own worst enemy', *Clay Shirky's writings about the internet,* viewed 20 July 2013, <http://www.shirky.com/writings/group_enemy.html>.

Shuck, S., Aubusson, P. & Kearney, M. 2010, 'Web2.0 in the classroom? Dilemmas and opportunities inherent in adolescent web2.0 engagement', *Contemporary Issues in Technology and Teacher Education,* vol. 10, no. 2, pp. 234–46.

Siemens, G. 2005, 'Connectivism: A learning theory for the digital age', *International Journal of Instructional Technology and Distance Learning,* vol. 2, no. 1, viewed 10 October 2013, <http://www.itdl.org/Journal/Jan_05/article01.htm>.

Siemens, G. 2007, 'Networks, ecologies and curatorial teaching', weblog, *Connectivism,* viewed 20 June 2013, <http://www.connectivism.ca/?p=93>.

Siemens, G. 2008. 'Learning and knowing in networks: Changing roles for educators and designers', *ITForum*, viewed 20 February 2010, <http://it.coe.uga.edu/itforum/Paper105/Siemens.pdf>.

Siemens, G. & Tittenberger, P. 2009, 'Handbook of emerging technologies for learning', *Learning Technologies Centre and Extended Education*, University of Manitoba, viewed 10 September 2009, <http://elearnspace.org/Articles/HETL.pdf>.

Simons, M. 2008, 'Towards a taxonomy of blogs'*, Australian Policy Online*, viewed 10 October 2013, <http://apo.org.au/commentary/towards-taxonomy-blogs-0>.

Stacey, P. 2013, 'The pedagogy of MOOCs', weblog, *edTech frontier,* viewed 31 May 2013, <http://edtechfrontier.com/2013/05/11/the-pedagogy-of-moocs>.

Stern, R. C. & Robinson, R. S. 1994, 'Perception and its role in communication and learning', in D. Moore & F. Dwyer (eds) *Visual literacy: A spectrum of visual learning,* Educational Technology Publications, Englewood Cliffs, NJ, pp. 31–52.

Sternberg, R. J. 1998, 'Metacognition, abilities, and developing expertise: What makes an expert student?', *Instructional Science,* vol. 26, pp. 127–40.

Stoerger, S. 2013, 'Making connections: How students use social media to create personal learning networks', in H. Yang & S. Wang (eds) *Cases on formal and informal e-learning environments: Opportunities and practice,* Information Science Reference, Hershey, PA, pp. 1–18.

Tan, Y.-H. 2005, 'Portfolio building in Chinese language learning using blogs', *BlogTalk Downunder conference*, Sydney, 20–21 May, viewed 25 May 2005, <http://incsub.org/blogtalk/?page_id=64>.

Technorati, n. d., *About Technorati*, viewed 10 October 2013, <http://Technorati.com/about>.

Thomas, A. 2005, 'Fictional blogging and the narrative of identities of adolescent girls', *BlogTalk Downunder conference*, Sydney, 20–21 May, <http://incsub.org/blogtalk/?page_id=109>.

Thomas, D. & Brown, J.S. 2011, *A new culture of learning: Cultivating the imagination for a world of constant change,* Create Space, Lexington, KY.

Thompson, P. 2013, 'The digital natives as learners: Technology use patterns and approaches to learning', *Computers & Education,* vol.65, pp. 12 – 33.

Towndrow, A., Aranguiz, A. & Purser, E. 2013, 'Realising the potential of peer-to-peer learning: Taming a MOOC with social media', *eLearning Papers,* no. 33, viewed 20 June 2013, <http://www.openeducationeuropa.eu/en/article/Realising-the-Potential-of-Peer-to-Peer-Learning%3A-Taming-a-MOOC-with-Social-Media?paper=124335>.

Tsai, S. & Machado, P. 2002, 'e-learning, online learning, web-based learning, or distance learning: Unveiling the ambiguity in current terminology', *e-Learn Magazine*, July, viewed 10 August 2002, <http://www.elearnmag.org/subpage.cfm?section=best_practices&article=6-1>.

Tschofen, C. & Mackness, J. 2012, 'Connectivism and dimensions of individual experience', *International Review of Research in Open and Distance Learning,* vol. 13, no. 1, pp. 124–43.

University of Northampton, 2010, e-Learning definition, University of Northampton, viewed 2 June 2010, <http://www.northampton.ac.uk/portal/page/portal/learningandteaching/students/e-learning/e-learningdefinition>.

Van Petegem, P. & Donche, V. 2006, 'Learning environment research in higher education: Assessing patterns of learning and teaching', in D. Fisher & M.S. Khine (eds.) *Contemporary approaches to research on learning environments: Worldviews,* World Scientific, River Edge, NJ, pp. 93–124.

Veletsianos, G. (ed.) 2013, 'Learner experiences with MOOCs and open online learning'*, Hybrid Pedagogy*, viewed 25 September 2013, <http://learnersexperiences.hybridpedagogy.com>.

Veletsianos, G. & Navarrete, C. 2012, 'Online social networks as formal learning environments: Learner experiences and activities', *International Review of Research in Open and Distance Learning,* vol. 13, no. 1, pp. 145–66.

Voorn, R. & Kommers, P. 2013, 'Social media and higher education: Introversion and collaborative learning from the student's perspective', *International Journal of Social Media and Interactive Learning Environments,* vol. 1, no. 1, pp. 59–73.

Vygotsky, L. S. 1978, *Mind in society: The development of higher psychological processes.* trans. M. Cole, M. Cole, V. John-Steiner, S. Scribner & E. Souberman (eds) Harvard University Press, Cambridge, MA.

Vygotsky, L. S. 1986, *Thought and language,* revised and ed. A. Kozulin, MIT Press, Cambridge, MA.

Walker, J. 1985, 'Writing and reflection', in D. Boud, R. Keogh & D. Walker, (eds) *Reflection: Turning experience into learning,* Kogan Page, London, pp. 52–68.

Waters, S. 2013, 'The state of educational blogging 2013', weblog, *The Edublogger*, viewed 10 August 2013, <http://theedublogger.com/2013/08/08/the-state-of-educational-blogging-2013>.

Watson, J., Edwards, S. & Thomas, K. 2013, 'Humans and machines: The role of people in technology driven organisations'*, Economist Intelligence Unit*, viewed 10 June 2013, <http://www.managementthinking.eiu.com/humans-and-machines.html>.

Watters, A. 2012, 'Unbundling and unmooring: Technology and the higher ed tsunami', *Educause Review*, September/October, pp. 60–1.

Watts, D. J. 1999, *Small worlds: The dynamics of networks between order and randomness,* Princeton University Press, Princeton, NJ.

Watts, D. J. 2004, *Six degrees: The science of a connected age,* W. W. Norton & Company, New York, NY.

Webb, G. 1997, 'Deconstructing deep and surface: Towards a critique of phenomenography', *Higher Education*, vol. 33, pp. 195–212.

Weight, J. 2005, 'Faster, neater, sharper: How different models of communication intersect', *BlogTalk Downunder conference*, Sydney, 20–21 May, viewed 25 May 2005, <http://incsub.org/blogtalk/?page_id=109>.

Weinberger, D. 2002, *Small pieces loosely joined: A unified theory of the web,* Perseus Publishing, Cambridge, MA.

Weller, M. J. 2007, *Virtual learning environments: Choosing and developing your VLE,* Routledge, Oxford.

Weller, M. 2011, *The digital scholar: How technology is transforming scholarly practice*, Bloomsbury Academic, London.

Weller, M. & Dalziel, J. 2009, 'Bridging the gap between web 2.0 and higher education', in S. Hatzipanagos & S. Warburton (eds), *Handbook of research on social software and developing community ontologies,* Information Science Reference, Hershey, PA, pp. 466–78.

Weller, M., Pegler, C. & Mason, R. 2005, 'Use of innovative technologies on an e-learning course', *Internet and Higher Education,* vol. 8, pp. 61–71.

Wells, G. 2000, 'Dialogic inquiry in education: Building on the legacy of Vygotsky', in C. D. Lee & P. Smargorinsky (eds), *Vygotskian perspectives on literacy research: Constructing meaning through collaborative inquiry,* Cambridge University Press, New York, NY, pp. 51–85.

Wenger, E. 1998, *Communities of practice: Learning, meaning, and identity,* Cambridge University Press, New York, NY.

Wertsch, J. V. 1985, *Vygotsky and the social formation of mind,* Harvard University Press, Cambridge, MA.

Wertsch, J.V. 2003, 'Commentary on: deliberation with computers: exploring the distinctive contribution of new technologies to collaborative thinking and learning', *International Journal of Educational Research*, vol. 39, pp. 899-904.

Wesch, M. 2008, 'A vision of students today (and what teachers must do)', *Encyclopedia Britannica*, weblog, viewed 21 October 2008, <http://www.britannica.com/blogs/2008/10/a-vision-of-students-today-what-teachers-must-do/Academic>.

Wesch, M. 2009, 'From knowledgable to knowledge-able: Learning in new media environments', *Academic Commons,* viewed 3 February 2009, <http://www.academiccommons.org/commons/essay/knowledgable-knowledge-able> (URL no longer available).

Williams, J. B. & Jacobs, J. 2004, 'Exploring the use of blogs as learning spaces in the higher education sector', *Australasian Journal of Educational Technology*, vol. 20, no. 2, pp. 232–47.

Williams, S., Fleming, S., Lundqvist, K. & Parslow, P. 2013, 'This is me: Digital identity and reputation on the internet', in S. Warburton & S. Hatzipanagos (eds) *Digital identity and social media,* Information Science Reference, Hershey, PA, pp. 104–17.

Wilson, S. 2009, 'Presence in social networks', in S. Hatzipanagos & S. Warburton (eds) *Handbook of research on social software and developing community ontologies,* Information Science Reference, Hershey, PA, pp. 493–511.

Wilson, B. & Ryder, M. 1998, 'Distributed learning communities: An alternative to designed instructional systems', *Educational Technology Research and Development*, viewed 5 May 2005, <http://carbon.ucdenver.edu/~bwilson/dlc.html>.

Winer, D. 2003, 'What makes a weblog a weblog?', weblog, *Weblogs at Harvard Law*, viewed 6 June 2010, <http://blogs.law.harvard.edu/whatMakesAWeblog AWeblog>.

Winske, C. 2013, 'BYOD and video: Mobile learning trends effecting your Campus now', weblog, *HigherEd Tech Decisions,* viewed 31August 2013, <http://www.higheredtechdecisions.com/article/byod_and_video_mobile_learni ng_trends_affecting_your_campus_now>.

Wise, L. 2005, 'Blogs versus discussion forums in postgraduate online continuing medical education', *BlogTalk Downunder conference*, Sydney, 20–21 May, viewed 25 May 2005, <http://incsub.org/blogtalk/?page_id=106>.

Woo, Y., Herrington, J., Agostinho, S. & Reeves, T. 2007, 'Implementing authentic tasks in web-based learning environments', *Educause Quarterly,* November, pp. 36–43.

Woo, Y. & Reeves, T. C. 2007, 'Meaningful interaction in web-based learning: A social constructivist interpretation', *Internet and Higher Education,* vol. 10, pp. 15–25.

Woodill, G. 2007, *Emerging e-learning services: Cutting edge practices for supporting innovative online training*, Brandon Hall Research, Sunnyvale, CA.

WordPress 2013, 'WordPress sites in the world', weblog, *WordPress.com,* viewed 10 October 2013, <http://en.wordpress.com/stats>.

Wrede, O. 2003, 'Weblogs and discourse', *BlogTalk conference,* Vienna, Austria, 23–24 May, viewed 2 October 2003, <http://wrede.interfacedesign.org/articles/weblogs-and-discourse>.

Zemsky, R. & Massy, W.F., 2004, 'Thwarted innovation: What happened to e-learning and why', *The Learning Alliance*, viewed 20 July 2006, <http://www.thelearningalliance. info/Docs/Jun2004/ThwartedInnovation.pdf>.

Zimmerman, B. J. 2000, 'Self-efficacy: An essential motive to learn', *Contemporary Educational Psychology,* vol. 25, pp. 82–91.

Zimmerman, B. J., Bandura, A. & Martinez-Pons, M. 1992, 'Self-motivation for academic attainment: The role of self-efficacy beliefs and personal goal setting', *American Educational Research Journal,* vol. 29, no.3, pp. 663–76.

Zimmerman, B. J. & Schunk, D. H. 2011, *Handbook of self-regulation of learning and performance,* Routledge, New York, NY.